FEDERCHIMICA
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The chemical industry in Italy

2023

On the cover:
“Chimica e fantasia”, Michele Cascella, 1967

The chemical industry in Italy 2023

Facts and figures to get an insight in the chemical industry

This publication aims to provide international readers with key elements regarding the chemical industry in Italy such as its most significant features and the main trends affecting its growth.

The Chemical Science and Industry together for a better quality of life

Households and constructions

Insulation, pipes, coatings, external insulation, window fixtures, paints, adhesives, conditioning, safety devices, solar panels, lighting...

Cars and motorbikes

Light materials, coatings, batteries, catalysts, additives for fuels, helmets and protection devices, car bodies...

Agriculture, nutrition

Fertilizers, crop protection products, packaging, preservatives, additives, zootechnics...

Health

Active ingredients, nano-and biotechnologies, over-the-counter drugs, veterinary drugs, medical gases, medical equipment, prostheses, medical imaging...

Technologies and products
Research and innovation

Personal and home care

Cosmetics, perfumes, soap, detergents, bath products, biocides...

Water treatment

Drinking water, waste water treatment, sea water desalination technology, plastic pipes...

Electronics and communication, publishing, sports

Information technology, screens, cables, batteries, integrated circuits, inks, printing products, sport equipment...

Textiles

Waterproof, windproof, thermally conductive, stain resistant, self repairing apparel, antimicrobial or antiallergic tissues...

Source: Cefic (European Chemical Industry Council), Federchimica

Chemical science and chemical industry have a unique interconnection. Indeed, while the former studies properties and transformations of matter, the latter acquires such scientific knowledge and incorporates it in technologies and products thanks to research and development activity, contributing to improve well-being and quality of life.

The importance of the chemical industry is often not properly perceived since most of its products are not directly used in everyday life: **they mainly consist of intermediate goods employed by other industries for producing final goods.** Nevertheless, chemical goods are incredibly widespread and affect daily life diffusely.

Thanks to successive transformations of both organic and inorganic raw materials (such as oil, coal, biomasses or water and minerals, respectively), the chemical industry creates numerous products: basic chemicals are the primary constituents of all other chemicals goods and lead to the manufacture of fine chemicals and specialties, which in turn are employed in other industries.

The Chemical Industry as driver of technology transfer

Organic and inorganic raw materials, biomass

↓

Basic chemicals

↓

Fine chemicals and Specialties

↓

Flows

Intermediate goods

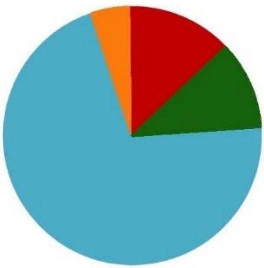
R&D

Competitiveness

Environmental sustainability

↓

Destination of chemical products by sector (in Italy, %)



Agriculture 5.0%

Services 13.0%

Consumption 11.0%

Industry 71.0%

Rubber & Plastics	19.9%	Pharmaceuticals	4.3%
Textiles & Leather	5.8%	Means of transport	3.9%
Food & Beverages	5.3%	Paper	3.7%
Metals	5.1%	Wood & Furniture	2.7%
Constructions*	4.7%	Machinery	2.5%
Electrical appliances	4.4%	Other industries	8.7%

(*) including materials for constructions

Source: Federchmica's calculations on Istat; 2019 latest available data

Chemical products play a significant role in any economic sector from agriculture (5.0%) to services (13.0%) down to households' consumption (11.0%); among the others, manufacturing is the sector affected the most by their use (71.0%).

The chemical industry is a far-reaching engine of innovation: thanks to its intermediate goods, it transfers **research-based** technological innovation to all user sectors, fostering their competitiveness and sustainability as well as contributing to job creation. Behind the worldwide success of made-in-Italy products (such as leather, wearing apparel, furniture, tiles and many more), one can often find innovative chemical firms and products.

To face global competition, made-in-Italy industries must raise their technological capabilities in full compliance with **environment safeguard objectives: the chemical industry represents the ideal partner to reach such goals.**

The Chemical Industry as solution provider for the European Green Deal

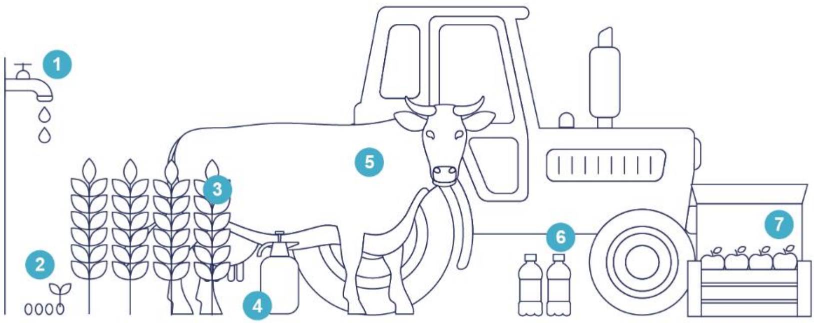
Source: Cefic (European Chemical Industry Council)

As the European Commission stated during the *High Level Group on the Competitiveness of the European Chemicals Industry* (2009), not only chemical products are not a threat with respect to sustainability goals, but they work as "solution providers". In fact, there are a multitude of contexts in which the chemical industry promotes sustainable development and circular economy models.

As far as global warming and limited availability of energy resources are concerned, the chemical industry has developed **various technologies and solutions aimed to cut down on energy consumption in houses and buildings**.

Another contribution regards motor vehicles, to improve their safety and eco-compatibility: **a lot of chemical products are employed in today's cars manufacturing, but there will be many more in tomorrow's.** Plastics, which make cars lighter, innovative elastomers and additives for tyres, which reduce friction, and rainproof materials for asphalt help to compress fuel consumption and reduce tyre wear as well as ensure optimal safety conditions. Chemistry also provides additives, catalysts and alternative fuels that reduce pollutant emissions and plays a leading role in the development of batteries for electric cars. Some studies show that, by 2035, electric cars will contain at least 30% more chemistry than current vehicles.

More food security and less waste thanks to chemicals



1

Water treatment
for purifying and making potable

2

Biotechnologies
for abundant crops also under adverse climate conditions

3

Fertilizers
for nutrition-rich crops

4

Crop protection products
against plant deseases

5

Veterinary drugs
for preventing and curing animal deseases

6

Plastic packaging and coatings
for efficient, cost-effective and sustainable storage

7

Specialized ingredients
for food storage, appetibility and high nutrition value

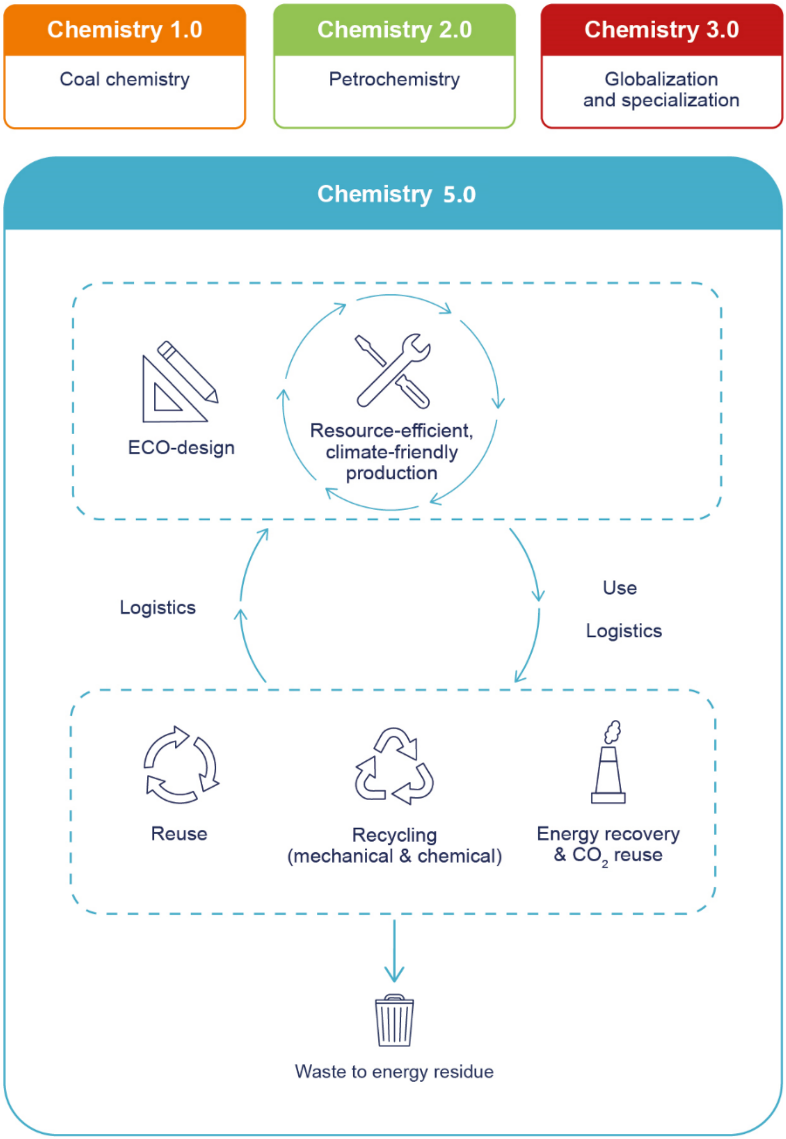
Source: Federchimica

The chemical industry is also a foreground player with reference to food security and waste reduction. Innovative technologies and products prevent animal diseases, enhance food conservation and preserve its nutritional properties, support water purification and distribution, allow increasingly consistent harvests also under adverse conditions.

Plastic packaging materials provide substantial benefits, too. **The amount of CO_2 emissions due to the manufacture of plastic packaging is significantly lower than the food-waste-related emissions which would occur in absence of suitable means of conservation**: for instance, plastic prevents the emission of 13 kilograms of CO_2 per kilogram of meat produced.

Chemical products from renewables are just one of **the many contributions the chemical industry as a whole give to sustainability: in fact, all its branches are providers of sustainable solutions**. Furthermore, renewable raw materials are not always more sustainable than traditional ones: **only Life Cycle Assessments provide exhaustive evaluations to identify what the optimal solutions are.**

From the Chemical Industry 1.0 to 5.0: circular economy and digitalization



Source: VCI (Verband der Chemischen Industrie) & Deloitte, Federchimica

The chemical industry is facing a **season of meaningful changes**, such as the evolution of international competition and the growing consideration towards an efficient and environment-friendly consumption of resources.

The chemical industry experienced different steps in its development, moving from a predominant use of coal to the rise of oil, down to the challenges of globalization and specialization. Now the chemical industry is entering its “5.0” phase: “doing more with less”.

Chemical Industry 5.0 means circular economy and digitalization. Starting from products’ design, new productive and recycling models are put in place to maximize the use of already existing molecules: linear production models make way for circular production models. The chemical industry plays a major role in such evolving context since **it is located upstream of different supply chains and is endowed with the technological competence to manage and lead change.**

With reference to returning and recycling, diverse and innovative ways to reuse or transform waste have been outlined: from utter reuse to recycling (both mechanical and chemical) down to energy recovery and CO_2 reuse.

The chemical industry in Italy

Main features of the chemical industry in Italy

(billion Euros, unless otherwise stated; 2022)

	Chemical industry	Chemicals and pharmaceuticals
Production	66.7	115.7
Export	43.3	90.9
Import	61.5	100.0
Trade balance	-18.2	-9.1
Domestic demand	84.8	124.7
Firms (no.)	2,798	3,281
Employed (thous.)	112.2	180.8
Investments	2.3	3.7
R&D spending	0.7	1.4

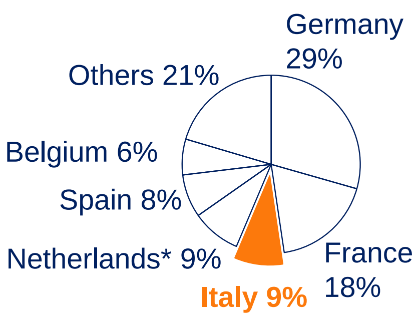
Notes: latest data available for R&D (2021) and investment spending (2020)

Source: Federchimica's calculations on Istat; 2022

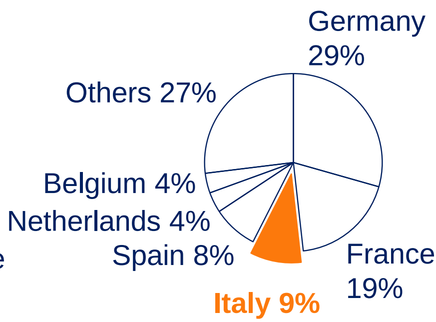
European chemical industry by country

(% share of EU27 total)

Production Value



People employed



(*) Netherlands' production value includes a considerable amount of merely commercial activities

Source: Federchimica's calculations on Istat, Eurostat; 2022

With a turnover of more than 66 billion Euros, Italy is the third European country in terms of chemical production and people employed. With a share on production of 9 %, it is also the 12th chemical producer worldwide. The turnover data for the Netherlands, apparently close to the Italian one, includes pure commercial flows passing through the Rotterdam's port, as demonstrated by the much smaller employment share.

With reference to various branches of fine chemicals and specialties, Italy holds even higher positions in international rankings: for instance, as far as pharmaceutical active ingredients are concerned, it boasts a global leadership.

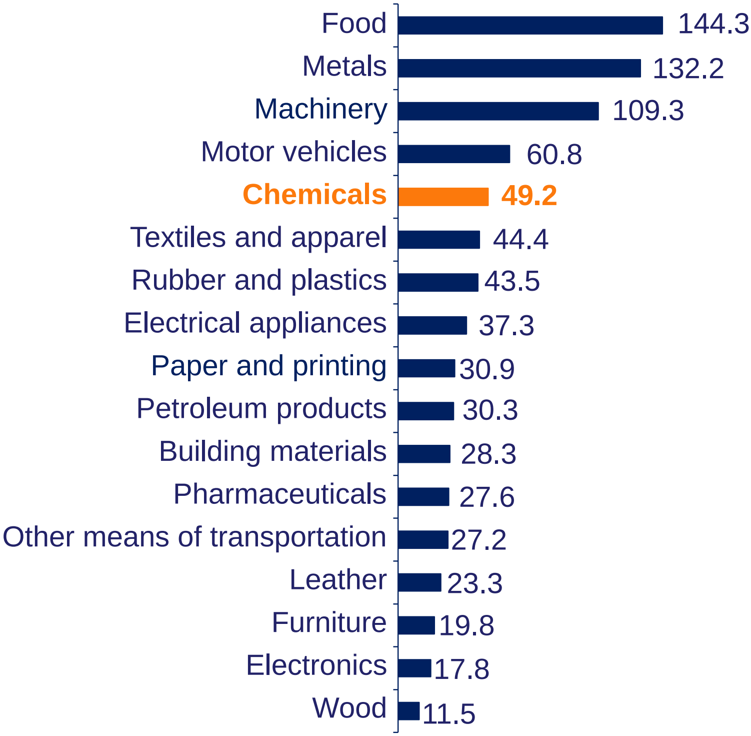
Being a **country with a strong industrial vocation**, Italy represents the third largest market for chemicals within the EU. Its positioning in the middle of the Mediterranean Sea can be extremely convenient: this is one of the reasons why many foreign-owned chemical companies have placed their Southern Europe strategic headquarters there.

Almost 2,800 companies are active throughout the whole national territory**, employing more than 112 thousand highly qualified people**.

Among major industrial sectors in Italy and with high R&D intensity

Industrial sectors in Italy by turnover

(millions of euro)



Source: Istat; 2020, latest data available

R&D intensity

(% on total employees)

	Chemical Industry	Manufacturing
R&D employees	8%	5%

Source: Istat; 2021

The chemical industry is the fifth industrial sector in Italy, but its importance is not limited to the dimensional component.

The industry is also characterized by an important research and development activity, with a share of employees dedicated to R&D of 8% compared to the manufacturing average of 5%.

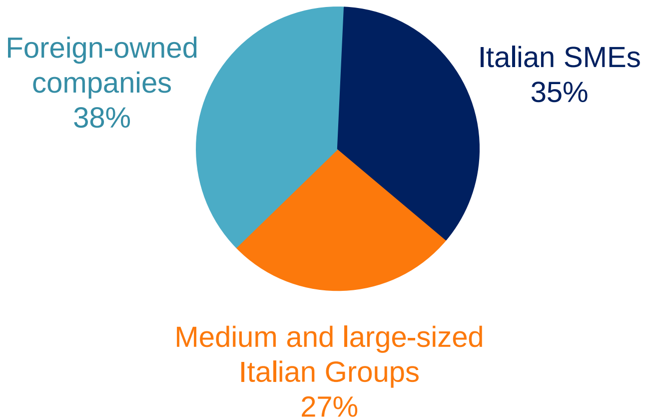
Capital intensity, innovation and highly qualified human resources are making chemicals one of the sectors with the highest productivity in the Italian landscape: **the added value per employee is among the highest and is 80% higher than the manufacturing average.**

Average personnel costs also place the chemical industry at the top of industrial ranking; essentially, **the chemical industry is a sector suitable for an advanced country like Italy because it is able to guarantee qualified and**, consequently, **well-paid employment.**

Well-balanced presence of different companies

The distribution of Italy’s chemical production

(% share of total production value)

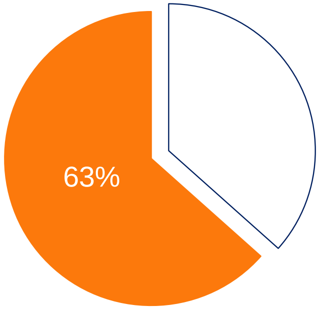


Notes: medium and large-sized Italian Groups are those whose worldwide sales exceed 100 million Euros

Source: Federchimica; 2022

Chemical production of domestic and foreign-owned multinational companies

(% share of total production value)



Source: Federchimica; 2022

The chemical industry in Italy is characterized by a well-balanced presence of three different actors: **Italian SMEs**, **Italian medium and large-sized Groups** and **foreign-owned companies.**

SMEs play an important role in many European countries, but their presence is even more significant in Italy, where they account for 35% of total value of production. They record notable performances in terms of productivity and quality employment; nevertheless, they often struggle dealing with uselessly complex regulations.

Italy also presents a valuable set of domestic-owned companies, both medium and large-sized, which contribute to 27% of total value production. Despite being smaller than the main international chemical corporations, they have enough expertise and critical mass to deal with key challenges such as R&D and internationalization.

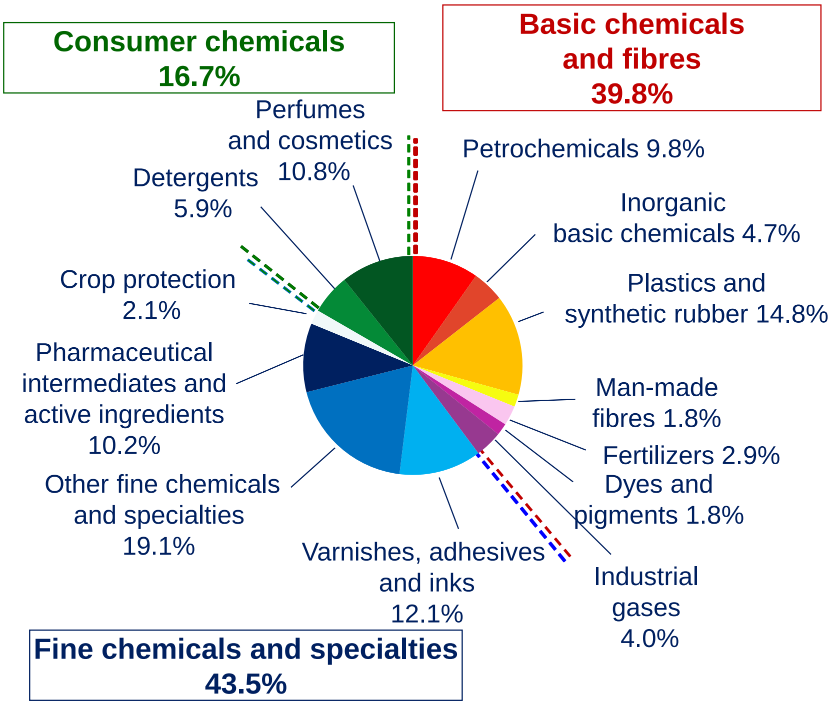
Foreign-owned chemical companies in Italy represent 38% of the whole chemical production value. They export more than 70% of their production value, which demonstrates Italy is considered not only an interesting market but also a valuable manufacturing platform. Many of them perform R&D activities in Italy, too.

The chemical industry in Italy is highly integrated with global markets: **about 63% of production value in Italy refers to multinational companies, either domestic or foreign-owned.**

Active in all different sub-sectors and specialized in downstream chemicals

Italian chemical production by sector

(% share of total production value)



Source: Federchimica's calculations on Istat; 2020, latest data available

Share of downstream chemicals on total production value (%)

Notes: downstream chemicals include fine chemicals and specialties as well as consumer chemicals

Source: Istat, Eurostat; 2020, latest data available

The chemical industry is characterized by a multitude of different branches; Italy's chemical companies are active in each of them.

A significant share (almost 40%) of total production value concerns basic chemicals and fibres, which are the main constituents of downstream chemical products. Basic chemicals and fibres sub-sector consist of a limited number of large producers.

Italy shows a remarkable and increasing specialization in downstream chemicals, namely fine and specialty chemicals as well as consumer chemicals: these sectors cover almost 61% of total production value in Italy, far exceeding the corresponding European average (39%).

In such sectors, scale economies are not particularly relevant; indeed, the key to success is the ability to provide customers with diversified and high-performance products which are tailored to specific needs. For these reasons, **downstream chemicals are characterized by a significant presence of SMEs.**

While showing a specialization in downstream chemistry, **Italy also maintains a significant presence in basic chemistry.**

Partnerships with Industrial Districts

The main Italian Industrial Districts

Firenze - Arezzo - Marche	leather - shoes
Sassuolo	ceramic tiles
Alto Livenza - Brianza - Pesaro	furniture
Cadore	eyewear frames
Arzignano - S. Croce	tanning
Vicenza - Arezzo - Valenza	jewellery
Varese - Torino - Napoli	aeronautics
Fermo - Brenta	shoes
Prato - Vicenza - Biella - Napoli	textiles - cloth
Vicenza	women‘s hosiery
Treviso - Vicenza - Padova	plastic products
Pordenone - Treviso - Fabriano	domestic appliances
Como	silk products
Montebelluna	sport shoes
Varese - Bergamo	rubber and plastics
Alpi Apuane - Verona	marble
Bologna	motorbikes
Castel Goffredo	women hosiery
Manzano	chairs and tables
Capannori	paper
Murge - Forlì	sofas
Lodi - Cremona	cosmetics
Lazio - Milano - Napoli	pharmaceuticals
Padova - Mirandola	biomedicals

Source: Intesa Sanpaolo

One of the most peculiar features of the Italian economic system is the presence of Industrial Districts (or Clusters): they consist in concentrated networks of SMEs, each located in well-defined geographical areas and specialized in the manufacturing of few, specific items. Italian Industrial Districts are acknowledged all over the world for their high-quality, cutting-edge products.

To guarantee first-rate and innovative goods, Clusters have often built partnerships with Italian chemical companies, which are able to develop sophisticated intermediates responding to any specific requirement.

Given these considerations, **investing in Italy's chemical industry offers a wide range of cooperation opportunities with a variety of qualified customers**: Italian Districts are characterized by a strong propensity to innovate and are often in search of competent partners for designing and testing new products.

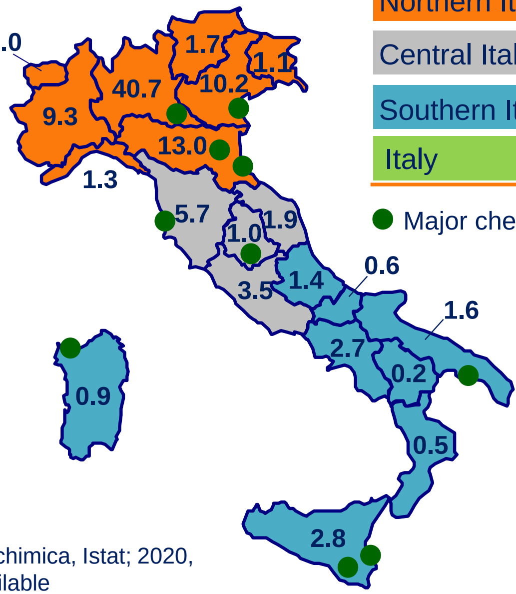
Choosing Italian chemical products means having access to the secret upon which the success of local Industrial Districts relies.

The geography of the Italian chemical industry

Distribution of chemical employment (%) and major chemical sites

Northern Italy	77.4
Central Italy	12.1
Southern Italy	10.5
Italy	100.0

● Major chemical sites



Source: Federchimica, Istat; 2020, latest data available

Main European regions for chemical production

		No. of people employed	% of population	% of EU chem. employment
1.	Île de France (F)	118,696	1.0%	9.9%
2.	Rhine-Westphalia (D)	111,412	0.6%	9.3%
3.	Bavaria (D)	62,127	0.5%	5.2%
4.	Rhineland-Palatinate (D)	53,461	1.3%	4.5%
5.	Hesse (D)	45,998	0.7%	3.8%
6.	**Lombardy (I)**	**45,438**	**0.5%**	**3.8%**
7.	Baden-Württemberg (D)	40,686	0.4%	3.4%
8.	Catalonia (E)	37,542	0.5%	3.1%
9.	Flanders (B)	33,151	0.5%	2.8%
10.	Lower Saxony (D)	28,072	0.4%	2.3%

Source: Federchimica's calculations on Eurostat, Istat; 2020, latest data available

Chemical production in Italy is concentrated in northern Regions, closer to European markets and local customer companies. Northern Italy accounts for more than 77% of chemical employment.

Lombardy has a true vocation for chemicals: not only it is the first Italian Region in terms of employment and production, but it **is also ranked among the top-six chemical Regions in Europe.**

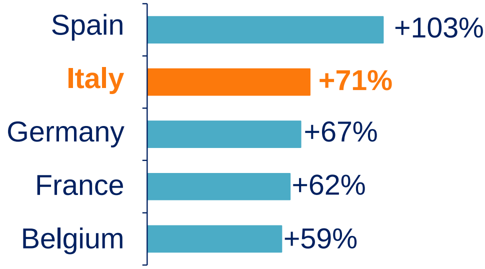
The Region presents the optimal conditions for the development of sophisticated and high-tech activities such as the chemical ones: in particular, there is an efficient network of chemical industry companies and other strategic actors such as universities, industrial plant engineering and advanced services companies.

There are noteworthy chemical sites all over the country, as well, including southern Regions and islands. They offer interesting foreign investment opportunities thanks to their logistic features, the availability of highly qualified workforce and investment support schemes.

A strong international attitude

Chemical export performance, by main European country

(% change in value, 2012-2022)



Source: Federchimica's calculations on Eurostat; 2012-2022

Fine chemicals and specialties: micro-sectors of specialization with trade surpluses

(trade balances, million Euros, 2022)

Cosmetics	3,600
Paints and varnishes	1,071
Catalysts	816
Additives for lubricating oils	666
Glues and adhesives	358
Detergents	192
Plasticizers and stabilizers for rubber and plastics	189
Products for the treatment of textile and leather	96
Additives for cements	89
Solvents and thinners	87
Descaling and similar preparations	63
Glazes and ceramic dyes	53
Mastics and sealants	18

Source: Federchimica's calculations on Istat; 2022

Italy's chemical industry enjoys a strong positioning in international markets, allowing it to benefit from globalization. **What Italy's chemical companies can offer to their international customers are** those key strengths which foster successful partnerships with domestic clients, too, namely **innovation, customization, flexibility and the ability to fulfill any client's specific requirement.**

Their trade performances have been continuously improving. Exports to turnover ratio has reached 65% in 2022, with an increase of more than 28 percentage points in the last 20 years. Moreover, comparing Italy's chemical exports to other major European countries, only Spain has performed better over the period 2012-2022.

Italy's specialization in fine chemicals and specialties emerges from export results, as well: those products, originally developed for made-in-Italy typical sectors **(auxiliaries, additives, varnishes, adhesives, etc.)** or embodying the principle of "beautiful and well made" (**detergents and cosmetics**), recorded a **trade balance of about 4.9 billion Euros in 2022**.

Innovation and growing engagement in R&D

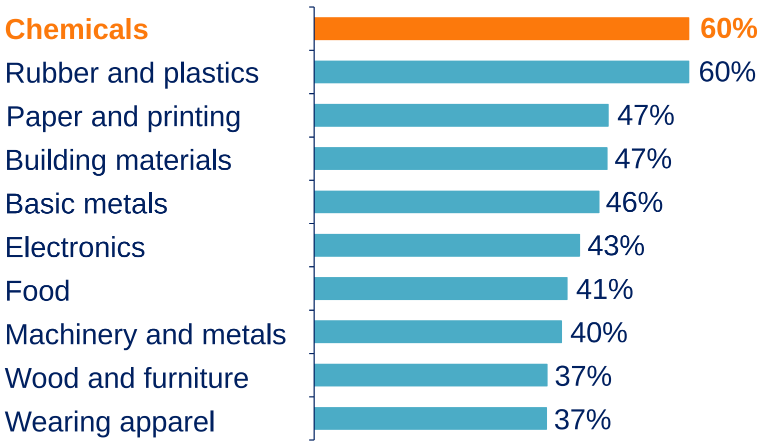
Chemical companies with in-house R&D by main EU country (number)

Germany	1,408
Italy	**1,231**
Spain	683
France	466
Netherlands	262

Notes: the companies considered are those with 10 or more people employed
Source: Eurostat - Community Innovation Survey; 2020, latest data available

Share of companies investing in eco-sustainable technologies and products

(% on the total of companies, period 2017-2021)



Source: Fondazione Symbola – Greenitaly Report 2022

The evolution of globalization has made incremental innovation insufficient to cope with growing international competition. Highly innovative and cutting-edge solutions are required to be considered strategic partners by international customers. Therefore R&D activity has become crucial to Italian chemical enterprises, which **increased the workforce devoted to R&D by 73% in the last decade.** In the chemical industry, innovation is based on research. Not only large-sized companies are involved in R&D, but SMEs too. In fact, there are **more than 1,200 chemical companies performing in-house R&D**: among EU countries, only Germany accounts for more.

Both product and process innovation are in place in the chemical industry. They allow its intermediate products to work as technological innovation drivers, transferring chemical R&D outcomes to the whole supply chain. Moreover, innovation is fundamental to pursue environmental sustainability. In that regard, the chemical industry is at the forefront: **the share of chemical companies investing in energy saving and/or environment-friendly technologies and products is higher (60%) than in almost all other industrial sector.**

Furthermore, the chemical industry is the first industrial sector in Italy in terms of share of environmental patents based on the OECD classification of technologies.

Qualified employment and lifelong learning

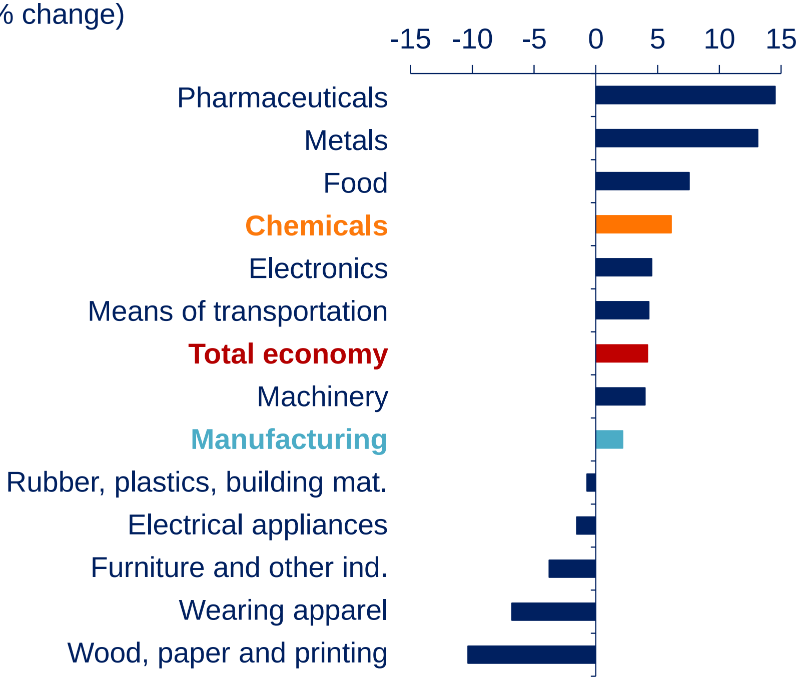
Employment activated by Italy's chemical industry
(thousands of employees, 2022)

Direct employment	112.2
Indirect employment	210.9
Total employment activated by the chemical industry	**323.1**

Notes: indirect employment refers to the chemical industry contribution in other sectors' employment activated through its purchases and investments

Source: The European House - Ambrosetti's calculations on Istat; 2022

Employment by sector in 2015-2022
(% change)



Source: Istat; 2015-2022

The chemical industry in Italy employs more than 112 thousand people. In addition, thanks to its satellite activities (such as investments and purchases), it also fosters qualified employment in other sectors: for each person employed in the chemical industry, almost 2 jobs are activated in the economic system, leading to an overall count of around 320 thousand employees.

On the whole, **chemical employees are characterized by high qualifications**: university graduates are 23% of overall chemical employment, compared to an average share of 11% in Italian manufacturing.

Alongside with the pharmaceutical industry, the chemical sector is the one investing the most for its workers' training: in fact, every year almost 30% of employees takes part in at least one non-compulsory training course, far exceeding manufacturing average (20%).

Chemical companies promote human resources qualification and productivity, which result in remuneration premiums, too: Italy's chemical industry wages are 39% higher than the national average. Furthermore, labor flexibility and quality employment are guaranteed by a responsible use of different types of contracts.

Between 2015 and 2022, the chemical industry has generated over 6,000 new jobs, being among the sectors that have contributed most to jobs creation within the country.

What foreign companies' managers appreciate the most in Italy's chemical industry

Strengths of chemical industry in Italy, according to top managers of foreign-owned companies

(% of foreign-owned companies recognizing medium to high importance)

Human resources	
- Problem solving attitude	91%
- Flexibility of human resources	91%
- Quality to cost ratio of more qualified employees	80%
- Flexibility of the organization as a whole	94%
Features of Italian market and value chains	
- Size	77%
- Quality of demand by trend setting Italian customers	74%
- Partnership with Italian customers to develop new products	60%
- Quality and reliability of equipment suppliers	80%
Italy as a manufacturing platform for export	**89%**

Source: Federchimica

The well-developed presence of foreign-owned companies proves that Italy's chemical industry presents remarkable factors of competitiveness.

According to a survey carried out across foreign-owned chemical companies' top managers, human resources are considered Italy's main strength since they guarantee excellent competencies both in chemistry and management, good quality to cost ratio (in particular for young and qualified profiles), high problem-solving capability and availability in terms of time dedicated to work, flexibility of the single employee as well as of the organization as a whole.

The survey pointed out the **positive role of chemical Industrial Relations**: through dialogue, attitude towards innovation and social responsibility, they prevent and overcome possible tensions deriving from organizational decisions.

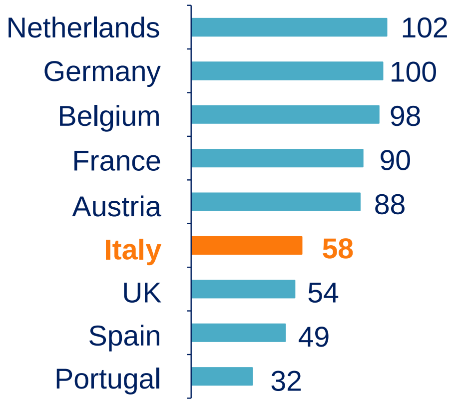
Italy’s attractiveness for chemical companies is also due to some features of its industrial system that is the third market for chemical products at European level, presents unique characteristics and ranks among the most advanced industries worldwide for several value chains. Traditional “made in Italy” sectors are trend setters and strongly oriented to export and innovation: as customers, they can offer favorable partnership opportunities to chemical suppliers. Such features can be widely found also in the so-called “new Italian specializations”, i.e. food, cosmetics, packaging, specialty chemicals.

Another key point in Italian value chains lies in the quality of engineering, which is a well-known excellence of Italian industry becoming even more relevant with the development of Industry 4.0.

Advanced Industrial Relations and competitiveness

Average hourly labour cost in chemical industry

(index Germany = 100; 2022)



Source: BAVC; 2022

Chemical sector funds for supplementary pensions and health insurance (2022)

	No. of employees enrolled (thousands)	Share of total employees (%)
Fonchim – Insieme per tutelare il futuro	171.9	82%
FASCHIM – Fondo di assistenza sanitaria	242.2	89%

Notes: - Fonchim members include employees referring to the following NCAs: chemical, insulation materials, glass, lamps & displays, mining and metals.
- FASCHIM members include 140 thousands employees referring to the following NCAs: chemical, insulation materials, mining and metals; 103 thousand employees' family members are enrolled, too.

Source: Fonchim, FASCHIM; 2022

Qualified employees, highly competitive labor costs and a solid system of Industrial Relations with innovative contents and collaborative bargaining attitudes with Trade Unions are just some of the key strengths of Italy's chemical industry.

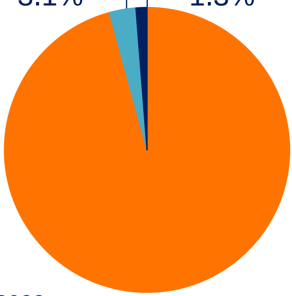
The chemical National Collective Agreement (NCA) offers a wide range of opportunities to chemical companies including the possibility to define daily and weekly working times at company level; a flexible job classification system, taking into account firms' specific organizational needs and providing simplified rules for SMEs; the promotion of wage negotiation at company level through collective performance-related pay linked to productivity and economic performances; the possibility to temporarily change NCA rules through company agreements; the establishment of Joint Committees at company level aimed at stimulating participatory consultations among Social Partners; guidelines to facilitate changes induced from Digital Transformation.

To foster firms' competitiveness and high-quality negotiations, the NCA advocates joint training programs for Social Partners, developed together with Trade Unions.

The commitment to Social Responsibility also led to the creation of Fonchim and FASCHIM, the first sectorial funds for supplementary pensions and health insurance.

Effective use of contractual instruments and low absenteeism

Employees by type of contract in chemicals and pharmaceuticals



Notes: average 2020-2022

Source: Federchimica; 2022

Non-worked hours in the chemical industry in 2021

(% of annual workable hours)

Non-occupational related diseases	3.2%
Paid leave	1.1%
Other paid leave	1.2%
Accidents and occupational diseases	0.3%
Other unpaid absences	0.2%
Assembly hours	0.0%
Strikes hours	0.0%
Chemicals	**6.1%**

Comparison between chemical and total industry in pre-Covid (2019)

Chemicals	5.1%
Total industry	6.4%

Source: Federchimica, Confindustria; 2019, 2021

The chemicals and pharmaceuticals use instruments for work flexibility in a socially responsible manner. **More than 95% of chemical workers have a permanent contract.** In addition, 45% of the hires are made directly with a permanent contract and a further 15%, initially with a fixed-term contract, is then transformed into a permanent contract.

Positive Industrial Relations are an essential instrument of competitiveness and productivity as evidenced by the low absenteeism rate within the sector (5.1% in pre-pandemic years compared to an industrial average of 6.4%). In 2021, the incidence of unworked hours on annual workable hours was affected by Covid, amounting to 6.1%. The main cause of absence from work is non-occupational related disease (with an incidence of 3.2%). Accidents and occupational diseases account for only 0.3%, pointing out the strong attention to worker safety. The almost null incidence of strikes on the total count of workable hours confirms the reliability and consistency of chemical Industrial Relations.

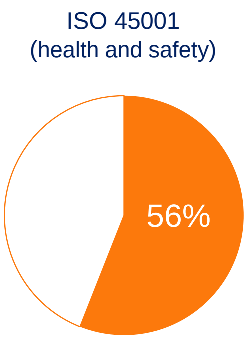
A strong commitment for Health, Safety and Environment

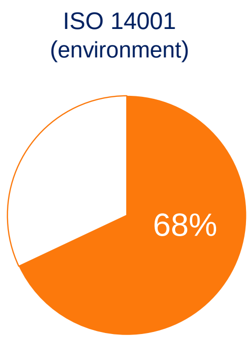
Health, Safety and Environment expenses in Italy's chemical industry
(2022)

Expenses for HSE (million Euros)	1,150
Share on turnover (%)	1.8

Source: Federchimica - Responsible Care; 2022

% share of companies with HSE standard certifications (2022)





Source: Federchimica - Responsible Care; 2022

Italian chemical companies are strongly engaged in sustainable development. Such a commitment requires **significant investments**: in 2022, more than 1.1 billion Euros were spent on Health, Safety and Environment (HSE).

These expenses are divided between investments (35%) and operating costs (65%). During the pandemic, the expenses for the implementation of the Covid-19 Protocols, essential for ensuring the safest continuity of activities, amounted to 110 million euros (approximately 1,000 euros per employee).

Chemical enterprises' commitment is also proved by the **growing adoption of HSE standards** obtained with certifications (such as ISO 45001, OHSAS 18001 and ISO 14001).

Together with participant companies, Federchimica has been managing the international **Responsible Care Program** in Italy for more than 25 years. It consists in a voluntary subscription program, within which member firms commit to pursue HSE objectives following a continuous improvement approach.

Safety for both employees and customers

On-the-job injuries

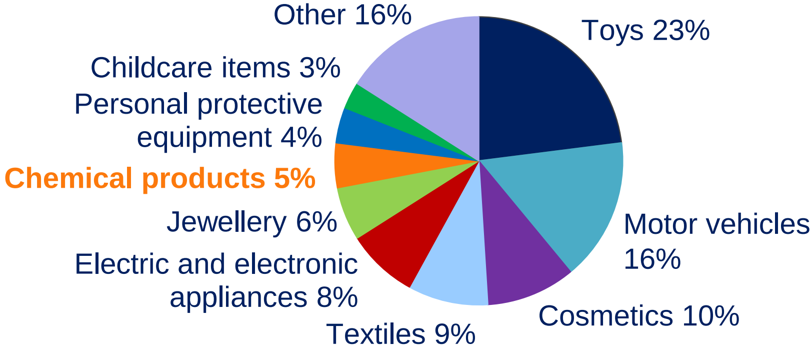
(No. of injuries per million hours worked)

Basic metals	21.7
Metal products	19.5
Maintenance	18.9
Wood	17.7
Food	17.5
Non-metallic mineral products	17.2
Other means of transport	16.8
Rubber and plastics	16.6
Furniture	15.4
Paper	15.3
Manufacturing	**13.9**
Machinery	12.5
Electrical appliances	11.3
Motor vehicles	10.5
Textiles	9.3
Beverages	9.2
Tobacco	9.0
Printing	8.5
Leather	8.4
Chemicals	**8.2**
Other manufacturing industries	6.9
Pharmaceuticals	5.8
Wearing apparel	5.4
Electronics	4.7
Coke	4.1

Notes: average values over the period 2019-2021

EU notifications relating to risky products

(%, 2022)



Source: European Union, RAPEX; 2022

The chemical industry is among the most virtuous industrial sectors with respect to safety and health at the workplace, as shown by the frequency of injuries per million hours worked (8.2 and down 40% since 2010) and the low incidence of occupational diseases (0.24). In 2006 INAIL (the National Institute for Insurance against Injuries at Work) agreed with Federchimica to charge discounted fees to those firms enrolling in Responsible Care, encouraging their efforts in promoting prevention and safety in the workplace. Such agreement has been renewed in 2019.

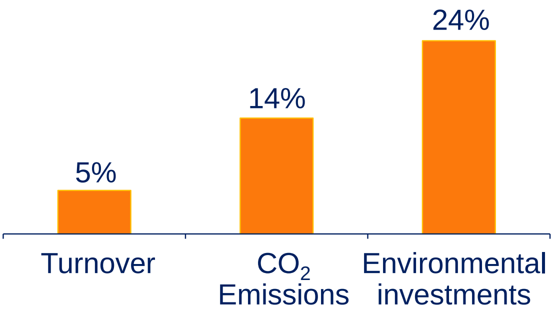
The safety of chemical products is guaranteed by strict standards and control systems; in particular **REACH**, the European regulation for the Registration, Evaluation and Authorization of chemical substances, is **recognized as the most advanced in the world.**

In 2022 only 5% of notifications from the European Union relating to products that pose a risk to consumers' safety and health concerned chemical products.

Concerning logistics issues, the chemical industry is constantly looking for safer and more sustainable solutions in terms of transports, packaging and distributive network rationalization. Federchimica established the so-called "**Emergency Transport Service**" to help public Authorities preventing and dealing with emergencies all over the national territory.

Environmental responsibility leading to tangible results

Share related to the chemical industry over the total manufacturing (%)



Source: Istat; average 2019-2020, latest data available

Share of companies that have undertaken actions for the environmental protection

(% of companies)

	Chemicals	Manufacturing	Ranking Chemicals
Separate collection and recycling of waste	73%	63%	1st
Waste management for pollutant reduction	65%	48%	1st
Saving of resources in production processes	55%	48%	3rd
Water saving	53%	42%	2nd
Reduction of in air emissions	52%	36%	1st
Reduction of noise and / or light pollution	46%	39%	3rd
Reduction of in water emissions	44%	20%	2nd
Environmental protection actions	**83%**	**71%**	**1st**

Source: Istat; 2016-2018

The chemical industry, by transforming matter, is an energy-intensive industry and has an important environmental impact.

As a conscious and responsible industry, the chemical industry pays particular attention to protect the environment: **the industry makes up to 24% of all environmental investments of the manufacturing industry compared to an incidence in terms of emissions equal to 14%.**

Indeed, **the chemical industry is already a leader in terms of actions referred to environmental protection**. Among the industrial sectors, it ranks in the first three places for all types of intervention and in first place for the widespread attention both to the management and recycling of waste and to emissions reduction.

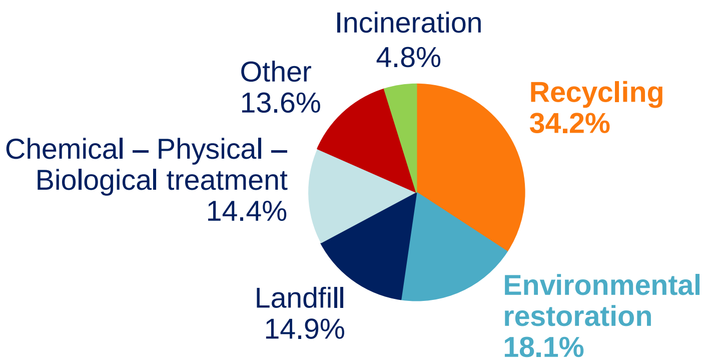
Significant improvements in terms of emissions and waste treatment

In air and water emissions from the chemical industry in Italy (% change 1989-2022)

Emissions in water:	
Nitrogen emissions	-77%
Chemical Oxygen Demand (COD)	-78%
Emissions in air:	
Nitrogen oxides	-94%
Sulphur dioxide	-99%

Source: Federchimica - Responsible Care; 1989-2022, latest data available

Waste by destination in 2022 (% shares)



Source: Federchimica - Responsible Care; 2022

All main environmental indicators show impressive improvements over the years. The improvement of industrial processes and the increasing efficiency of the water discharge treatment plants have allowed a strong reduction of all polluting emissions into water.

Indeed, emissions in water have been reduced by more than 81%, while emissions in the atmosphere were cut down by 98%.

Moreover, in line with circular economy models, the chemical industry sees waste as a key resource for recovering materials or energy, thus reducing the use of primary raw materials and preserving important resources.

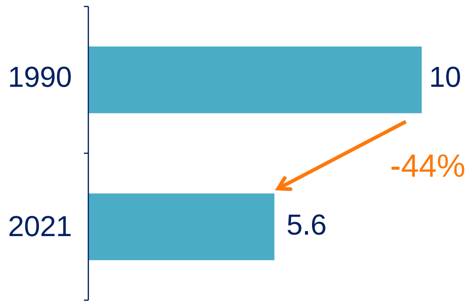
In the chemical industry 34% of the waste produced is recycled and 18% is destined for environmental restoration.

In the last six years, the share of produced waste sent for recycling has increased by 11 percentage points and **recycling is now the first practice in waste treatment**.

Doing more with less

Evolution in the consumption of fossil raw materials

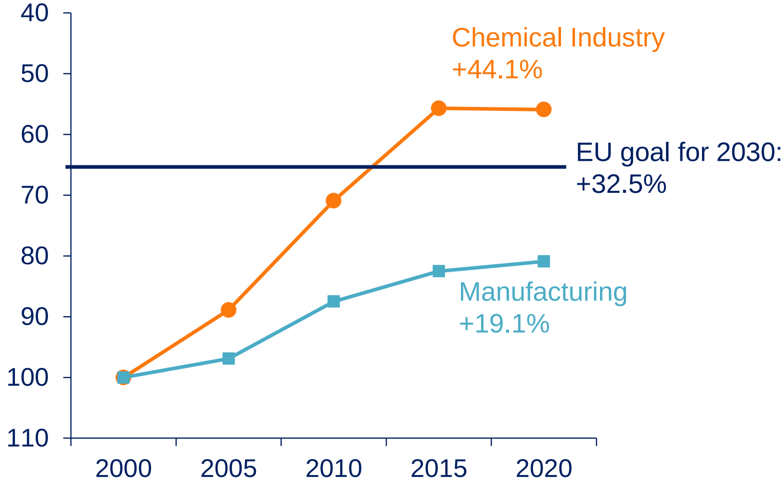
(oil equivalents, million tonnes)



Source: Federchimica - Responsible Care; 2021

Improvements in energy efficiency

(energy consumption to industrial production ratio; inverse scaling; indexes 2000=100)



Source: ENEA, ODYSSEE Project; 2020, latest data available

Aiming to “do more with less”, over the years chemical enterprises have obtained significant results in terms of efficiency in using resources with tangible benefits for the environment.

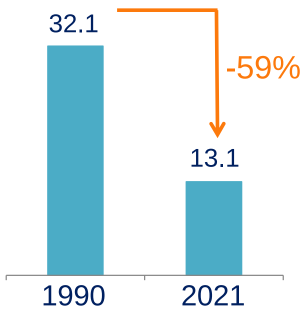
Main input are still fossil raw materials; nevertheless, their use has decreased by 44% since 1990. Water consumption has dropped too (-49% over the time span 2005-2022) and the share of potable water utilized is 1.3% only.

The chemical industry has lowered its energy needs by 44% between 1990 and 2021, despite being an energy intensive sector. It has never ceased to show improvements also during periods of production expansion, proving its constant commitment beyond economic conjuncture: **its energy efficiency** (energy usage to production volume ratio) **has improved by 44% with respect to 2000**, far exceeding both manufacturing average and EU efficiency objective for 2030.

Important development in the reduction of greenhouse gas emissions

Direct greenhouse gas emissions from the chemical industry, in Italy

(scope 1, CO_2 equivalents, million tonnes)



EU Package for climate and energy

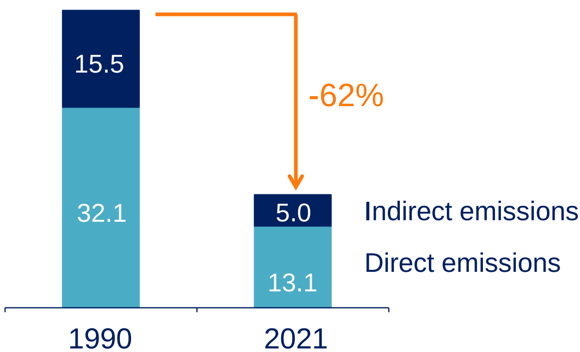
Goal 2020: -20% for GHG emissions (compared to 1990)

Goal 2030: -55% for GHG emissions (compared to 1990)

Source: ISPRA; 1990-2021

Direct and indirect greenhouse gas emissions from the chemical industry in Italy

(scope 1 and 2, CO_2 equivalents, million tonnes)



Source: ISPRA; 1990-2021

Since 1990, **the chemical sector has reduced its direct greenhouse gas emissions (scope 1) by 59%, exceeding the new and ambitious target set by the Green New Deal for 2030 (-55%).** The incidence of chemicals on total Italian emissions has halved.

Also, indirect emissions (scope 2) – associated with the use of electricity, heat and steam purchased in production processes and utilities – **have been reduced by 68% compared to 1990**. Considering all emissions (scope 1 and scope 2), the chemical industry reduced its impact on climate change by 62% compared to 1990.

In addition to reducing its own emissions, **the chemical industry allows to reduce greenhouse gases by all user sectors**: a study by McKinsey estimated that each tonne of CO_2 equivalent emitted for chemical production avoids the emission of 2.6 tonnes of greenhouse gases from other industries or end users.

The chemical sector has already developed several technologies aimed at reducing, for example, the energy consumption of homes and promoting more sustainable mobility.

Implementation of REACH regulation

REACH entered into force in the European Union on June 1st 2007. At that time this regulation represented a great innovation in the risk assessment/management related to chemicals exposure. REACH is based on the idea that industry itself is best placed to ensure that the chemicals it manufactures and puts on the market in the EU do not adversely affect human health or the environment.

For substances manufactured or imported or put on the market ≥ 1 t/y per company, manufacturers and/or importers need to register by submitting a specific dossier to the European Chemicals Agency (ECHA).

REACH also foresees an authorization system aiming at ensuring that substances of very high concern are properly controlled and progressively replaced by suitable alternative substances or technologies where these are economically and technically viable. In addition, EU authorities may impose restrictions on the manufacture, use or placing on the market of substances causing an unacceptable risk to human health or the environment.

In 2007 Federchimica - together with other associations of the industrial system - set up Centro Reach S.r.l. with the mission to support Italian chemical companies and downstream users in the implementation of REACH regulation.

Centro Reach activity is specifically oriented towards SMEs, the most common company size in the Italian industrial system.

Over the years Centro Reach has extended its services portfolio to other chemicals legislations such as CLP and Biocides regulations.

Centro Reach provides advisory and consultancy in several areas, i.e.:

- assessment of the impact of REACH/CLP/Biocides regulation on company business;
- preparation/revision of Safety Data Sheets and labels;
- preparation and submission of technical dossiers (inquiry, registration, authorization, Poison Centers notification, SCIP notification, etc.);
- Consortia management;
- interface with ECHA and competent Authorities;
- implementation of REACH-like regulations (e.g. China, S-Korea, Turkey, UK and USA)
- training courses.

Centro REACH S.r.l.

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Quality and certifications

Chemical companies operating in Italy have become increasingly aware of the importance of responsible production (namely, preserving workers and consumers health, as well as the environment). On the whole, commitment to operating in accordance with sustainability principles has been well-imprinted in their culture for many years. Furthermore, chemical companies in Italy are conscious that carrying out their activities responsibly represents a crucial factor of competitiveness.

To that extent, regulations and standards such as the “Certification of Quality, Environment and Safety” have significantly fostered the chemical industry’s engagement towards sustainbility and responsible production. Thanks to its proactive approach, Italy’s chemical industry shows the best performances regarding ISO 9001, ISO 14001/EMAS and ISO 45001 compared to other industrial sectors. In addition, environmental sustainability (ISO 50001, carbon and water footprint, end of waste and waste management) shows an improving positive trend, highlighting how Italian chemical companies take care about the environment.

Such remarkable results have been possible thanks to the contribution of Certiquality: established by Federchimica in 1989, this certification authority has aimed at providing its member companies with high-qualified audit services. Certiquality enjoys a prominent position among audit bodies, with more than thirty-five thousand certifications issued in both European and non-European countries. As far as chemical companies in Italy are concerned, Certiquality represents a reliable and specialised partner, supporting and providing solutions compatible with the wide variety of certification standards requested by chemical and pharmaceutical, medical devices, agri-food, building materials, logistics and transportation industries.

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www.certiquality.it

SC Sviluppo chimica, Federchimica's service company

SC Sviluppo chimica S.p.A., a service company fully owned by Federchimica, supports chemical companies by offering professional services in several areas, such as:

- product safety and regulatory compliance;
- plant management and industrial hygiene;
- transport and logistics;
- innovative industrial and educational initiatives promoting energy efficiency and sustainable development;
- R&D projects, horizontal innovative initiatives and venture capital,
- Industrial Relations and National Collective Agreement;
- IT and administrative support.

In order to foster the chemical industry's competitiveness, SC Sviluppo chimica S.p.A.:

- promotes sectorial diffusion of state-of-the-art technology, innovation and best practices information within the above indicated functional areas, exploiting specific market and technical competencies stemming out from the 17 Associations which the Federation is composed of;
- monitors European Commission's funding opportunities to support chemical companies

(particularly SMEs)'s investment in R&D, innovation and sustainability, assisting them to design, develop, network, elaborate, present, get funded and report jointly-participated R&D projects;

- promotes the attractivity of Chemical Industry among risky investors (venture capital and private equity funding partners) supporting the emersion of best practices and innovative investments within the fields of sustainable & green chemistry, circular economy and bioeconomy, in order to support latest market developments and sustain technology exploitation such as Industry 4.0 and other promising implementations;
- organizes training courses for managers and public officers on product and plant safety, security, logistics and energy issues.

Sviluppo chimica spa

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FEDERCHIMICA

Governance, Structure and Associations

FEDERCHIMICA

Federchimica is the abbreviated name of the Italian Federation of the chemical industry. Founded as the Italian Federation of Chemical Industry Associations in 1920, it became Aschimici in 1945 and it was transformed into Federchimica in 1984.

Member Companies

At present over 1,450 companies, with a total of more than 95,000 employees, are part of Federchimica. They are grouped into 17 Associations, organized into 38 product groups. Federchimica is a member of Confindustria (General Confederation of the Italian Industry), of Cefic (European Chemical Industry Council) and of ECEG (European Chemical Employers Group).

Targets

Federchimica, whose primary objectives are the coordination and support of the role of the chemical industry in Italy as well as the promotion of its development capability, has the following main targets:

- to elaborate guidelines on economic, industrial and trade union policies as well as in the areas of environment, innovation and energy policy;
- to promote these policies to public Authorities, national economic Organizations, other entrepreneurial Organizations, international Organizations to whom

the Federation belongs, Trade Unions, environmental and consumer Organizations;

- to contribute to the establishment of an accurate image of the chemical industry in the public opinion;
- to carry out studies and projects inspiring and sustaining entrepreneurial choice;
- to contribute to the constant promotion of member companies’ upgrading, with a particular attention to initiatives in the field of innovation and sustainability.

Management Departments

Federchimica’s activity is carried out by the General Management Department and by five Central Departments:

- Industrial Relations,
- Internal Relations,
- Institutional Relations,
- Technical and Scientific Affairs,
- European Union.

Sector Associations

The activities of sector Associations are coordinated by the General Management Department and implemented in close coordination with Central Departments.

For further information and membership:

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Phone +39 02 34565.207
s.paloni@federchimica.it

Confindustria → **FEDERCHIMICA** ← **CEFIC**

↓

17 Sector Associations

↓

38 Product Groups

The 17 Sector Associations of Federchimica

AGROFARMA
Plant protection products

AIA
Aerosol products

AISA
Animal health-care products

AISPEC
Abrasives
Auxiliaries for detergents and surfactants
Food additives and processing aids
Starches and starch derivatives
Flavors and fragrances
Biomass derived chemicals
Intermediates and specialty chemicals
Lubricants manufacturers
Financial, service, engineering and research for the chemical industry
Ingredients for food supplements and functional food
Raw materials for cosmetics and additives for cosmetics and pharma
Photosensitive products
Bitumen waterproofing membranes

ASCHIMFARMA
Pharmaceutical raw materials and intermediates

ASSOBASE
Inorganic & organic chemicals
Surfactants and raw materials for detergents

ASSOBIOTEC
Products and processes of biotechnological origin

ASSOCASA
Cleaning and maintenance products

ASSOFERTILIZZANTI
Mineral fertilizers
Organic and organo-mineral fertilizers
and soil conditioners
Specialty fertilizers

ASSOFIBRE CIRFS ITALIA
National association of man-made fibers producers

ASSOGASLIQUIDI
LPG for combustion
LPG for traction
LNG

ASSOGASTECNICI
Technical and special gases
Medical gases
Hydrogen energy vector

ASSOSALUTE
O.T.C. medicines (self-medication medicines)

AVISA
Adhesives and sealants
Paints and varnishes
Printing inks

CERAMICOLOR
Ceramic glaze, inorganic pigments and metal oxides

COSMETICA ITALIA
Cosmetics in pharmacies
Cosmetics in perfume shops
Herbalist’s cosmetics trade
Cosmetics for beauty salons
Professional products for hairdressers
Contract manufacturing

PLASTICSEUROPE ITALIA
Compounds and auxiliaries for plastic, plasticizers and other related products
Advanced materials
Thermosetting resins and system
Thermoplastic resins and system

General Management Department

Director General
Claudio Benedetti

Vice Director General
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Economic analysis and internationalization
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Central Departments

Industrial Relations

Collective bargaining, social and labor legislation, social partners' education and training, labor statistics and analysis

Paolo Cuneo
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ind@federchimica.it

Internal Relations

Administration and financial control, organization and development, training, general services (outsourced to Accademia S.p.A.), information technology

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Institutional Relations

Relations with national Parliament, central and regional public administrations

Andrea Cortesi
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Technical and Scientific Affairs

Safety, health and environment, international trade, energy, climate change and Responsible Care program, logistics, R&D, innovation financing and partnership

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European Union

It provides support to the Federation advocacy plans and liaises with the European associations located in Brussels

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Sector Associations

AGROFARMA
National crop protection association

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Phone +39 02 34565.334
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AIA
Italian aerosol association

Andrea Fieschi
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AISA
National association
of animal health-care products

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AISPEC
National association
of fine chemicals and specialized sectors

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ASCHIMFARMA
National association of active ingredients
and intermediate producers
for the pharmaceutical industry

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ASSOBASE
National association of organic
and inorganic basic chemistry producers

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ASSOBIOTEC
National association
for the development of biotechnologies

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ASSOCASA
National association of detergents and specialties for
industry and home care

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ASSOFERTILIZZANTI
National association
of fertilizers producers

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ASSOFIBRE CIRFS ITALIA
National association of
man-made fibers producers

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ASSOGASLIQUIDI
National association
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ASSOGASTECNICI
National association of technical,
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ASSOSALUTE
National association
of the self medication industry

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AVISA
National association of varnishes, inks, sealants and adhesives producers

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CERAMICOLOR
National association
of ceramic glazes, inorganic pigments
and metal oxides producers

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COSMETICA ITALIA
Italian association of cosmetics industries

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PLASTICS EUROPE ITALIA

Italian association of plastic material producers

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