

INGENIUM

The exploitable potential of Italian capital goods in the international landscape

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EXECUTIVE SUMMARY AND POLICY RECOMMENDATIONS

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A context in which abnormality becomes the new norm... In recent years, Italian companies have had to cope with a series of shocks, putting a strain on the adaptability of their strategies to keep up with the fast pace of new challenges. First came the Brexit vote in the UK, which made the solidity of the European single market more uncertain, then the sudden hollowing out of international multilateral institutions under the Trump presidency in the United States, with the intensification of the US-China conflict. Even more serious and global in scope was the pandemic outbreak with consequent constrains in global supply chains. Finally, they had to deal with the outbreak of the war in Ukraine following the Russian invasion. The high degree of integration with which companies were accustomed to operating along global value chains has made it even more difficult to adapt to the new context of unusual¹ business, in which the shortening of supply chains is being reconsidered as a resilience strategy.

... and is in continuous evolution due to ongoing transitions Together with the effects of the numerous shocks listed above, those produced by long-term trends such as digitization and climate change must also be considered. Companies, in fact, find themselves having to innovate constantly to keep pace with both technological progress and the adoption of increasingly sustainable production strategies. This produces a framework characterized by a very high level of complexity (Graph A).

Graph A
Main future challenges for exporting companies



The global economy slows down amidst inflation and restrictive monetary policies The rebound in global demand post-pandemic and the war have accelerated inflation, following the gradual withdrawal of measures adopted to counter Covid-19. Prices began to rise more rapidly in the second half of 2021, especially due to the recovery of people’s mobility, but also due to the high amount of savings accumulated due to the inability to spend during the pandemic. Inflation, especially in Europe, started to accelerate much more markedly after the outbreak of the war in Ukraine and the blockage of imports of hydrocarbons from Russia. Following the peak reached during the winter of 2022, inflation began a downward path. To accelerate its reduction, central banks have embarked on a series of rate hikes, with recessionary effects also

¹ “Business Unusual” is the title of the report by the European Bank for Reconstruction and Development (EBRD), 2022/2023 edition.

THE EU ALLOCATES 127 BILLION EURO FOR REFORMS AND DIGITAL INVESTMENTS



ACT PRODUCTS



202
product categories
12
sectors

for global economic growth. The more persistent the high rate of inflation the longer the period of high interest rates will be and, indeed, although already declining, inflation rates are expected to remain above the 2% target in 2023.

The risk of weaker global demand and low investment is increasing The reference context is particularly challenging for Italian machinery exports, which face a bottleneck due to possible recessionary effects that could lead to a slowdown in global demand. In particular, high interest rates are a burden on the demand component that has the greatest impact on the export of capital goods, namely investment. Moreover, the strong presence of Italian exports in some emerging markets will have to take into account a higher country risk due to the interest rate differential with advanced countries, which could lead to capital outflows and instability in exchange rates. Finally, uncertainty in international markets risks triggering structural changes in the balance of global value chains, on which companies' strategies often depend.

The digital and ecological transition permeates the future of the economy

The events of recent years have only accelerated a process that was already evident in the global economy. The "double transition", digital and ecological, has long been one of the main challenges that companies must face, but it also brings with it great potential for growth. By allocating approximately €127 billion² for digital reforms and investments related to national recovery and resilience plans, the European Union itself has recognized the need to accelerate the process of digitizing member countries. The Digital Economy and Society Index (DESI³) published by the EU shows that Italy has a wide margin to fill compared to the major European economies (Italy ranked 18th out of 27 member countries in 2022). It will therefore be crucial to make the most efficient use of the substantial PNRR funds, approximately 48 billion euro, allocated for digital transformation. Moreover, an optimal use of these resources would act as a driving force in the ecological transition process, allowing for the digitization of energy systems to optimize operations and interconnect them to the network. It's clear that companies play a key role in connecting the digital and ecological transition, being able to bring innovations on both fronts.

Servitization is a crucial element for business growth Among the main steps that companies must take to remain competitive is to provide more services in addition to the product sold. This aspect is becoming increasingly relevant in order to be competitive in international markets. More specifically, more advanced services are rapidly developing, such as e-learning or augmented/virtual reality, in order to increase the specific knowledge of personnel and customers. Similarly, opportunities arise from a greater implementation of predictive maintenance plans through sensor technology and the increase, within the portfolio, of services aimed at increasing or modifying the original functionality/productivity of the product. The performance of companies could also benefit from the offer of process optimization services such as pay per volume/use and machines as a service, which has been little developed so far.

Automation, creativity and technology (ACT) of Italian machinery as a competitive lever

In facing the international scenario, Italy can rely on the export of highly sophisticated capital goods, in particular, those characterized by a high intensity of automation, creativity and technology. ACT encompasses 202 product categories⁴ divided into 12 sectors linked to machinery production,

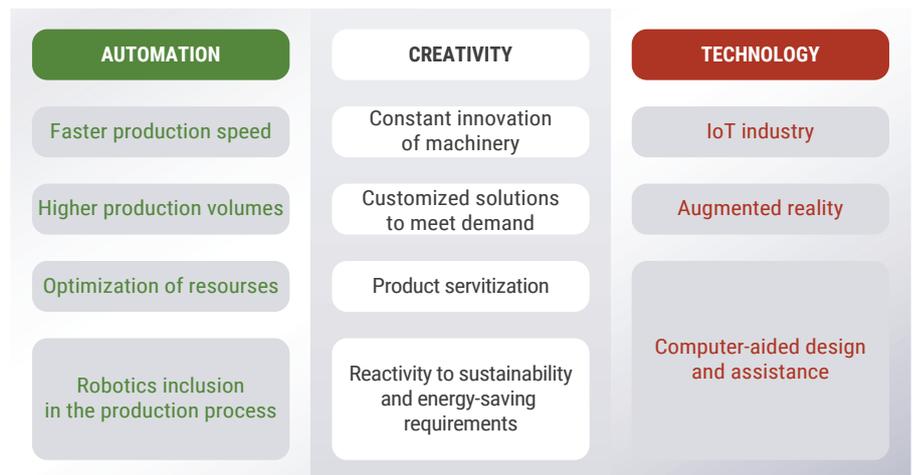
² <https://digital-strategy.ec.europa.eu/en/policies/desi>

³ The Economy and Society Digitization index (DESI), 2022, Italy.

⁴ The identification of the ACT group was carried out in close collaboration with the twelve industry associations belonging to Federmacchine.

especially characterized by a high degree of precision, an increasingly pervasive presence of electronics compared to mechanical components, the agility in adopting tailored solutions, and a growing emphasis on services in the sales offering (Graph B). Italy has a competitive advantage in terms of both the applied sales price and, at an equivalent price, the higher quantities of machinery sold for many categories of products, and it is not surprising that Italy is the world leader in the production of many types of machinery.

Graph B
Italian ACT industrial machines: what are their distinctive features?



GROWTH IN ITALIAN ACT INDUSTRIAL MACHINERY IN 2022



+14%

compared to the 2019-2021 average

THE MAIN ITALIAN ACT PRODUCTS IMPORTERS
UNITED STATES, GERMANY, CHINA, FRANCE, SPAIN

The performance of Italian companies in various sectors has been resilient

Despite the high degree of uncertainty, in 2022, Italian companies in the ACT industrial machinery sector recorded an improvement of over 14% compared to the average of the 2019-2021 three-year period. This performance should certainly be interpreted with caution due to strong inflationary pressures, but it places Italy ahead of France and Germany. In 2022, Italy's growth was approximately double that of France and eight times that of Germany in textile industry machinery exports. Even more positive results were seen in the sector of Mechatronic systems and components for power transmission, where Italian exports grew more than three times compared to the two main European competitors. Finally, it's also noteworthy Italy's only apparently moderate performance in the sector of Machinery and materials for foundries. In this last sector, Italy is the only country to register export growth, while France and Germany are losing market share.

Italy is among the top exporters both in terms of market share and competitiveness among international suppliers of ACT products

In 2020, Italy ranked fifth, behind China, the United Kingdom, Germany, and Austria, as the most competitive international supplier out of the total of 202 products considered. The main importers of Italian ACT machinery remain the United States, followed by Germany and China. The importance of these three markets is highlighted by the weight of their demand in the total amount of Italian ACT exports. In fact, including France and Spain, which rank fourth and fifth in terms of import share, these five countries represent over one-third of the entire global Italian ACT goods exports. However, from 2018 to 2020, global demand for ACT capital goods slowed down, with Italian goods experiencing a more pronounced decline, resulting in a 1.4 percentage point contraction in market share. Despite this, Italy managed to remain in the upper part of the market share rankings with a share of 8.8%, trailing only behind Germany, China, and Japan.

The ACT export is worth almost 28 billion euro... The value of Italian ACT machinery exports worldwide can be divided by destination markets. The ad-

ITALIAN ACT EXPORTS AMOUNT TO



28
billion euro

EXPLOITABLE POTENTIAL EVENLY DISTRIBUTED BETWEEN ADVANCED AND EMERGING COUNTRIES



16
billion euro in total

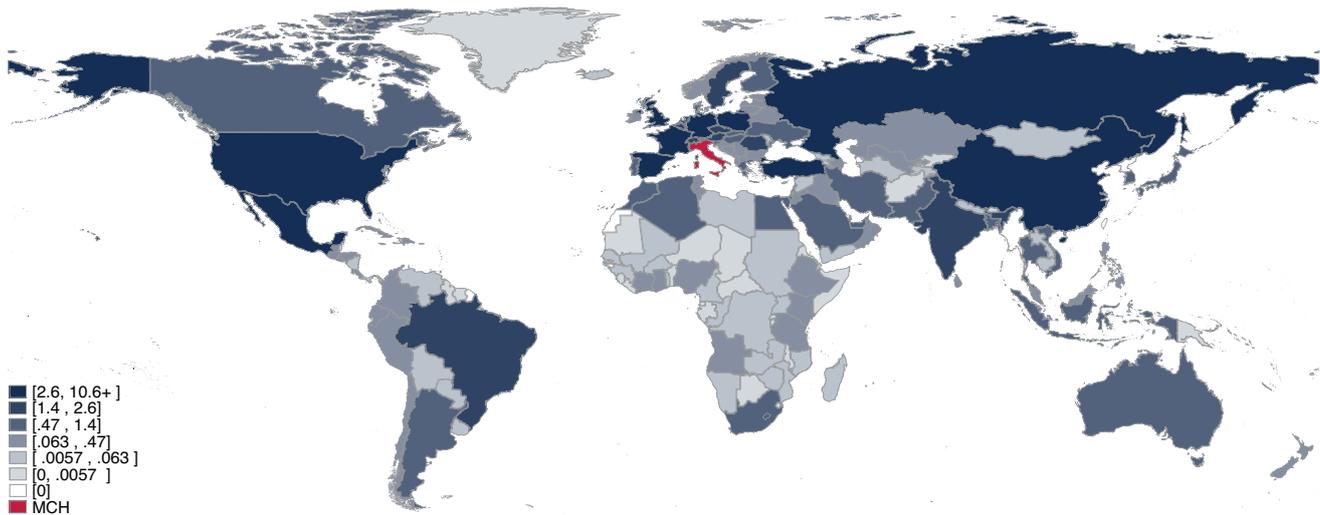
vanced markets have the greatest weight in the export of Italian ACT products of excellence, together absorbing over 18 billion euro of them. The value of exports to emerging markets is instead more limited and accounts for just over 9 billion euro. ACT export has grown especially in the Americas, both North and Latin America and the Caribbean, as well as in the European continent, destinations that have recorded the highest growth in 2022 compared to the previous three years.

... and another 16 billion of exploitable potential Despite the prospects of a global demand slowdown, with the advanced economies experiencing the most marked decline, there are still significant opportunities to expand the export of ACT products. The exploitable potential seems evenly distributed between advanced and emerging countries (about 8 billion euro in each macro-area), encouraging companies to increase their market share in both. Graph C offers a quick view of the geographical distribution in dollars of Italian ACT exports worldwide.

Advanced and emerging markets pose different challenges but both offer a high exploitable potential With regard to advanced markets, the considerable size of the US market weighs heavily on the determination of Italian ACT export shares. The sector of Mechatronic systems and components for power transmission is the one that could find a stronger demand in the United States, with an estimated additional export potential of around 675 million euro. Equally significant is the potential for expansion in the US market for Machines and molds for plastic and rubber and Machine tools, robots and automation (respectively 403 and 223 million euro). France and Germany have the same growth potential, 600 million euro, which, however, seems to be more concentrated in a few sectors in the case of France (over 50% in Mechatronic systems and components for power transmission) and more distributed in the

Graph C - World exports of ACT products

(Exports of ACT machinery in current dollars, % shares, 2018-2020 average)



Source: elaborations by Centro Studi Confindustria based on UN-Comtrade data.

case of Germany (where the maximum potential per sector is 119 million euro in Machine tools, robots and automation). Canada and Austria follow closely with a total exploitable export potential of 600 and 500 million euro respectively (Table A).

Table A - The countries with the highest potential for Italian ACT products*

(Ranking of the top 5 advanced and the top 5 emerging countries according to Italy's export potential in billions of euro)

Country	Exploitable potential	Main sectors	Main competitors by country
FIRST FIVE ADVANCED COUNTRIES			
 USA	1,7	Mechatronic systems and components for power transmission Machines and molds for plastics and rubber Machine tools, robots, and automation	Germany, Japan and South Korea
 France	0,6	Mechatronic systems and components for power transmission Machines for the textile industry Machines and equipment for ceramics	Germany, France and Switzerland
 Germany	0,6	Machine tools, robots, and automation Machines and accessories for glass Machines for wood processing	China, Switzerland and Japan
 Canada	0,6	Mechatronic systems and components for power transmission Machines for wood processing Machines and equipment for natural stone processing	Germany, Japan and South Korea
 Austria	0,5	Machine tools, robots, and automation Machines for packaging and wrapping	Germany, China and Hungary
FIRST FIVE EMERGING COUNTRIES			
 China	2,0	Mechatronic systems and components for power transmission Machines for the textile industry Machine tools, robots, and automation	Germany, Japan and South Korea
 Turkey	0,7	Machines for the textile industry Machines and molds for plastics and rubber Machines for the graphic, paper, cardboard, and related industries	Germany, China and Belgium
 India	0,6	Machines and molds for plastics and rubber Machines for the textile industry Machines for footwear, leather goods, and tanning	Germany, Japan and South Korea
 Mexico	0,4	Mechatronic systems and components for power transmission Machine tools, robots, and automation Machines and materials for foundries	Germany, Japan and South Korea
 Brazil	0,3	Machines for glass accessories	China, Japan, Spain

** The potential and identification of the main competitors by market are carried out according to the Export Potential Analysis and Development (ExPANd) methodology of the Manlio Masi Foundation, which was developed by Tullio Buccellato and Enrico Marvasi in a research project started in 2012 and coordinated by Beniamino Quintieri.

Source: elaborations by Centro Studi Confindustria and Manlio Masi Foundation based on UN-Comtrade data.

The additional potential in emerging markets is driven by the Chinese market, where 52% of the total export potential, amounting to approximately 2 billion euro, is still exploitable. In China, this potential is largely due to the size of the market which, in a future perspective, will be even more favored by the consistent growth rates of the economy, higher than the world average and fueled by a rapid post-pandemic recovery. In Turkey, the second-ranked emerging market, exports have already approximately reached 1 billion euro, compared to an overall potential of 1.8 billion. India is the third emerging country with the widest potential for Italy (600 million euro) and is also the fastest growing country in the G20 and could have significant relevance in the coming years. Among emerging markets, countries in South America are also noteworthy, particularly Mexico and Brazil, which respectively offer 400 and 300 million euro of exploitable potential.

ITALY'S TOP COMPETITORS

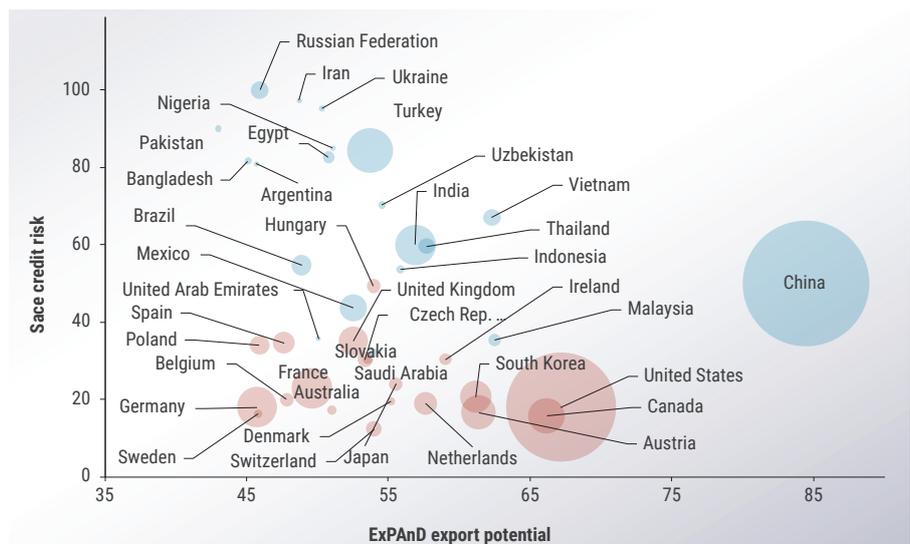


Italy mainly competes with Germany, China, and Japan Germany is Italy's top competitor in almost all advanced markets. The geographic proximity strengthens its presence in European countries, primarily Austria and Switzerland, which are also linked to Germany by linguistic and cultural factors. In the case of emerging markets, German competition remains equally pervasive. While Germany often appears among competitors in Western markets, especially in the United States, China is a strong competitor in emerging countries. However, despite many Chinese products falling under the same categories of goods, they are often of lower quality than their Italian counterparts. This implies that Italian exporters, despite the marked overlap of Chinese shares, could achieve better results if they could more effectively reach their customers in emerging markets by focusing on the quality of their products and services.

The exploitable potential in emerging markets is accompanied by higher credit risk The pandemic first and then the war have contributed to a significant deterioration of risk in various countries. Emerging countries have been hit the hardest (Graph D), due to both their more fragile economies and the lack of a collective response, which European countries, instead, were able to rely on. In many cases, there has been higher indebtedness in both the public and the private sector and this led to a generalized increase in credit risk.

Graph D Assessing export potential in the light of risks

(Relationship between SACE 2023 credit risk and 2018-2020 ExPANd export potential)



Note: blue = emerging markets; red = advanced markets. The credit risk indicator developed by SACE is the average risk of default on payment to sovereign, corporate, and banking counterparties to which an Italian exporting company is exposed. The ExPANd potential indicator considers export potential compared to similar competitors, the supply-demand compatibility of exports, and market expansion prospects.

Source: elaborations by Centro Studi Confindustria and Manlio Masi Foundation based on SACE and ExPANd data.

To understand the implications, the analysis of potential is accompanied by that of the risk that each market presents. The high positioning of Russia and Ukraine on the credit risk scale is not surprising, as the two countries are directly involved in the conflict. Advanced countries remain rather secure, and they represent the most significant destination for ACT exports. Finally, China cannot be overlooked, being the country with the highest export potential, which currently does not present a high credit risk, but the current precarious international scenarios could make it worse.

Italian ACT exports to ASEAN countries struggle after the pandemic Italian ACT goods exports to ASEAN⁵ countries recorded a sharp slowdown due to the pandemic, with a drop of nearly 29%. Unlike sales towards the rest of the world, which resumed at sustained rates in the following two years, those of ACT goods recorded a new decline in 2022. However, if we look at the ACT exports performance before 2020, there are good reasons to remain optimistic about the potential of these countries. The last decade has seen Vietnam replace Indonesia and Thailand as the top market for Italian ACT goods. This growth in ACT exports to Vietnam is largely driven by significant investment plans that companies should monitor to intercept real sectoral booms in the coming years. However, Thailand and Indonesia remain markets with significant potential and together represent 50% of the ASEAN destinations for ACT goods in 2022. The former has proven to be able to develop an advanced and well-diversified manufacturing industry over the years, which, despite having a good internal production capacity, allows Italian companies to take advantage of export opportunities thanks to their clearly advantageous position in a Thai industry that is increasingly focusing on higher value-added manufacturing.

Non-tariff barriers and payment defaults are the main obstacles to ACT exports to ASEAN countries Unlike the export of many Italian products to ASEAN countries, ACT goods enjoy a rather favorable tariff treatment thanks to their strategic role in promoting development, technological advancement, and competitiveness of the domestic industry. While tariff barriers are not an obstacle to Italian ACT products, the same cannot be said for so-called non-tariff barriers. These measures are mainly present in Vietnam and the Philippines, less so in Thailand. In addition to the difficulties that companies face in trading their products in these countries, there is also a significant risk of payment default. The insolvency rates of non-financial companies in the Asian region have increased significantly since the pandemic crisis, remaining well above the global average. This is a factor to be constantly monitored given the peculiarity of ACT goods, which are often sold with deferred payment agreements.

Given the challenges of the global context, it is necessary to intervene on various fronts in order to enhance the competitiveness of companies (Table B).

⁵ Brunei, Cambodia, Philippines, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand, Vietnam

Table B
The instruments to activate
to realize the potential

SUPPORT SERVICITIZATION	ADOPT MORE SUSTAINABLE BEHAVIORS
Encourage the adoption of preventive and predictive maintenance	Use components with lower environmental impact and of latest generation
Align the company's strategic orientation with costumer needs	Promote the use of repairable systems rather than replaceable ones in case of malfunctions
Intensify the use of e-learning, augmented virtual reality and pay-per-volume/use process optimization services	Collaborate with suppliers to reduce waste and used material, both incoming and outgoing
PROMOTE INTERNATIONAL TREATIES	STIMULATE INNOVATION
Strengthen traditional EU-US ties to have a say in the preparation of new trade regulations	Invest in more efficient technologies for collecting data and information directly from machinery through the use of sensors
Within the EU framework, promote the preparation of new free trade agreements or the expansion of existing ones	Adopt innovative company models in synergy with mechatronics
Take advantage of synergies created by external trade agreements such as the Regional Comprehensive Economic Partnership	Promote diversification through product innovation and/or creation of new product lines
	Encourage business investment in innovation

ITALIAN ACT EXPORTS
IN EUROPE ACCOUNT
FOR



41%

In an increasingly uncertain context, it is wise to strengthen existing trade agreements and lay the groundwork for new ones

The succession of events that have shaken the global economies and put highly complex and fragmented production chains to the test has highlighted the importance of forging agreements that ensure the proper conduct of activities even in difficult times. For Italy, this would mean strengthening its trade agreements primarily with European Union countries, an important outlet for the sale of capital goods (accounting for about 41% of exports) and the main source of direct investment in Italy, but not only. It will be also crucial to restore the bond between the United States and the EU and establish new Free Trade Agreements (FTAs) to face an increasingly intense competition also strengthened by agreements between third countries, such as the Regional Comprehensive Economic Partnership (RCEP) in Asia. The synergies produced by new international trade agreements, even if Europe is not among the signatory countries, must still be exploited by Italian companies to strengthen their position in those markets.

Customer experience is becoming increasingly important for companies

Even in the capital goods sector, customer demand is increasingly oriented towards greater product customization, more transparent communication, and post-sale additional services. Companies should, therefore, strive to revise their paradigms and rethink their strategic orientation to reorganize their supply chains to meet customer demands and evaluate their experience. The path to an ideal level of servitization of ACT machinery starts from an initial phase of company responsiveness, followed by the ability to anticipate customer needs, manage data, organize the entire company, and finally design products and use data to respond to customer needs.

Sustainability is becoming increasingly indispensable in business strategies

Attention to sustainability in a broad sense, including environmental, social, and

organizational issues, is increasing. Companies are therefore driven towards new business models. If in the past it was sufficient to satisfy the needs of shareholders, today, company strategies cannot neglect all external stakeholders. This new paradigm translates into abandoning the evaluation of a company's performance by only its profit/loss analysis of its income account; it's time to move towards the so-called triple bottom line. The value created by the company no longer resides solely in its ability to make a profit but is assessed in light of the economic, environmental, and social dimensions. The strong pressures of a demand increasingly close to sustainable consumption models and the interventions and regulatory obligations imposed by the government and the EU imply a necessary revision of companies' strategic plans. The promotion of sustainable development, therefore, aligns with the maximization of value rather than profit and sees companies improve their characteristics and vocations through the pursuit of medium-term sustainability objectives.

Servitization and sustainability go hand in hand The growing need to demonstrate to customers the sustainability of production processes, coupled with the need to continuously improve process efficiency, could promote circularity mechanisms in the economy, including the reuse of industrial machinery and/or materials for their production. In a sustainability-focused approach, at equal performance, the use of low environmental impact and latest generation products should prevail, allowing for less energy consumption by machine tools and waste reduction. Furthermore, it is necessary to adopt systems that can be repaired, rather than replaced, in case of malfunctions during their life cycle. Finally, the quantity of waste produced can be further reduced by collaborating with suppliers to reduce the material used in incoming packaging and by recovering and reusing incoming materials for outgoing piece packaging.

Innovating to remain competitive Operating in international markets and facing a high degree of competition requires companies to innovate in order to make their product distinguishable from that of their competitors. Current trends related to sustainability, digital transition, and adaptation to high levels of uncertainty represent a further drive towards continuous updating of the entire supply chain. Innovation, both in product and process, is a key element in increasing the value added generated by the company. In this sense, a strategy may include introducing a new product or adding a service to an existing one, so as to offer consumers a range of products that are constantly improving in terms of technical components, materials used, usage methods, or other functional characteristics. Achieving a competitive advantage for a company also stems from its commitment to innovate the method of production and distribution of products, with the diffusion of 4.0 technologies (now labeled 5.0 with emphasis also on aspects related to sustainability and the centrality of the human figure in production processes), which makes mechanical and electronic components within machinery increasingly indistinguishable and in continuous evolution.

Investments in data collection and information play a fundamental role in overcoming future challenges In addition to fundamental interventions on product portfolio, sales network, organization processes and technologies, investing in data and information collection is a priority for understanding customer dynamics and profitability. Whoever manages to get them more quickly will undoubtedly have a significant competitive advantage. This can be done both by collecting existing data, the use of which could enable new commercial campaigns and potential sources of immediate profit, and by defining an integrated data system that will serve to enable the development of new services. Companies will therefore be called upon to adopt a solid digital and technological framework to remotely collect data on product usage and performance.