

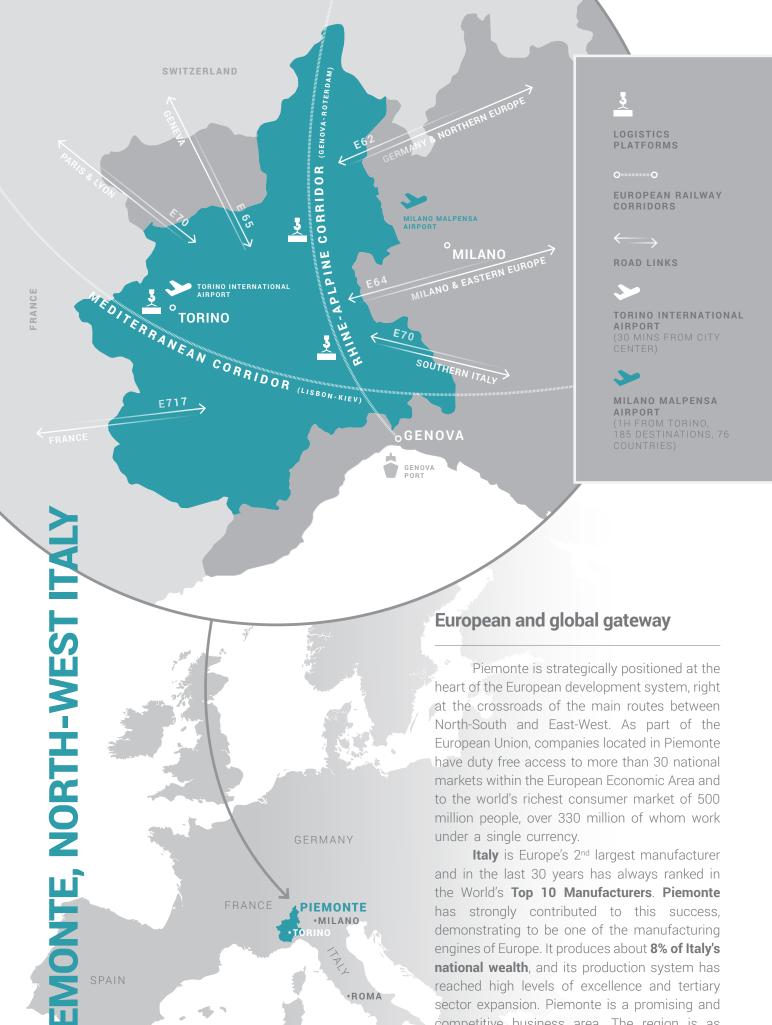




Tradition to Drive the Future of Mobility







GERMANY

PIEMONTE

·MILANO

·ROMA

have duty free access to more than 30 national markets within the European Economic Area and to the world's richest consumer market of 500 million people, over 330 million of whom work

under a single currency. **Italy** is Europe's 2nd largest manufacturer and in the last 30 years has always ranked in the World's Top 10 Manufacturers. Piemonte has strongly contributed to this success, demonstrating to be one of the manufacturing engines of Europe. It produces about 8% of Italy's national wealth, and its production system has reached high levels of excellence and tertiary sector expansion. Piemonte is a promising and competitive business area. The region is as dynamic in industry as in services, with a skilled, flexible and versatile workforce.

POPULATION

4.4 m
(7.3% OF THE NATIONAL TOTAL)

PEOPLE LIVING IN TORINO AREA

OVER **2.3 m** (52% OF REGIONAL TOTAL)

OVER

1k towns

EXPORT

€46.6 bn
(9.8% OF THE NATIONAL TOTAL)

GDP

€133 bn
(7.7% OF THE NATIONAL TOTAL)

COMPANIES

426,314(7% OF THE NATIONAL TOTAL)

OVER

1.8 m
PEOPLE EMPLOYED
(8% OF THE NATIONAL TOTAL)

ABOUT

€1 bn
TO BOOST REGIONAL
COMPETITIVENESS

PIEMONTE RANKS

4th in Italy
FOR EXPORT QUOTA

Recent data confirms that Piemonte is a leading Italian region in R&D. Companies expenditure in R&D: 1.42% of GDP (national average of 0.65%), with a number of workers in R&D of 6.2 per 1.000 inhabitants (national average of 4.0) and an increasing IP impact, with a number of 137.6 patents registered per million inhabitants (national average of 83.6) (Source: Istat 2017).

THE R&D SYSTEM

200 private and public R&D centers, 4 Science & Technology Parks

1st

Italian region in terms of private investment in R&D

3rd

Italian region for hi-tech patents

50%
of the region's
European
patents come
from automotive
companies

Innovation Hubs

BioPmed — Life Sciences and Health - www.biopmed.eu

CGreen — Green Chemistry and New Materials - www.cgreen.it

CLEVER — Energy and Clean Technologies - www.poloclever.it

MESAP — Smart Products and Manufacturing - www.mesap.it

Pointex — Textile - www.pointex.eu

Polo ICT — Information Communication Technologies

www.poloinnovazioneict.org

Polo AGRIFOOD — Agrifood - www.poloagrifood.it



A worldwide leading cluster

Italy is the fourth largest European automotive market after Germany, the UK and France. The Italian automotive industry is primarily concentrated in Torino and in Piemonte: around **35% of the 2,467 companies** (with 160,000 employees) active in Italy **are in fact established here** (Source: Automotive Industry 2020 by ITA - Italian Trade Agency). Piemonte and its capital Torino, birthplace of Fiat, then FCA, are not only the core of the national automotive industry, but of European car and mobility technology. **The key players of the automotive world are located in Piemonte**: major OEMs, SMEs and supply chain, R&D centers and engineering academies. The synergy between these key players has made a decisive contribution to positioning the region among the worldwide leading clusters in a sector characterised by a high level of innovation and research, such as the automotive sector: in fact, the technological innovation is subject of constant attention and is deeply rooted within the engineering culture of Piemonte. Universities and research institutions play a very active role in the overall development and innovation of the industry: from skilled vocational training and niche specialised engineering programs to independent and collaborative research projects, universities are a key component of the industrial sector.

Piemonte is the forerunner in Italy in terms of automotive components companies and accounts for around 45% of the national automotive sector's total revenue.

Source: Automotive Industry 2020 by ITA - Italian Trade Agency

34%

of the Italian automotive components industry is in Piemonte

39%

of the Italian automotive components turnover is in Piemonte

77%

of companies export abroad

67%

of companies invest in R&D

Source: 2019 Observatory on the Italian Automotive Components Sector, by ANFIA, Torino Chamber of Commerce and the Center for Automotive and Mobility Innovation of the Department of Management of the Ca' Foscari University of Venice.

Among Piemonte's leading key players AVL, Changan Automobile European Designing Center, CNH Industrial, Delphi Italia Automotive Systems, Denso Thermal Systems, Eaton, Endurance Overseas, FCA Fiat Chrysler Automobiles, FEV, Italdesign, JAC Italy Design Center, Lear Corporation, Magna Steyr Italia, Marelli, Microsoft Innovation Center Torino, Punch, Reply, Schaeffler Italia, SKF Industrie, Telecom Italia, Valeo, Webasto, Yanfeng Italy Automotive Interior Systems, ZF -TRW Automotive, 5T

Comprehensive know-how and a complete supply chain devoted to the future

Piemonte's automotive production encompasses the entire supply chain from the upstream phases to the final products, offering business and know-how from the concept of the vehicle till its delivery: project planning, prototyping, styling, robotics and automation, components and mass production, industrialisation of the product and driving test.

The tradition of "knowing how to make cars" has always been preserved while being reinterpreted to match changing market request and available technologies. Moreover, the role of machinery industry, R&D and design is strategic at every level. The strong leadership of Piemonte in robotics and mechatronics has fostered innovation, automation and cost-efficiency throughout the entire supplychain also by the widespread adoption of casting processes for lightweight material and new manufacturing technologies such as additive manufacturing (3D printing) technologies.

Furthermore, through the link with leading system and technology providers (often located in the area), the supply chain is able to offer high qualified capabilities and competences on electrical and electronic architecture, including power conversion systems, safe and secure real-time communication systems, advanced human-machine interfaces and remote monitoring systems.

New Vehicle Architecture

Many famous style studios, design firms, designers and innovative concept companies work in Torino and in Piemonte. These professionals are shifting their attention from a pure style research mindset to the focus of re-designing vehicles also as multimodal and connected platforms able to respond to the requirements of the sharing economy and Mobility as a Service (MaaS) model.

The attention to new vehicle architecture conceived in Torino and Piemonte impact the:

- concept design and advanced design, meaning style but also re-inventing new auto functions and applied technologies, by including connectivity, infotainment and new concept models.
- product engineering, this being a highly technological process in which new materials and new construction technologies are merged to create new architecture for light-weight, recyclable vehicles which are not polluting and are cheap at the same time, making them sustainable and accessible to everybody.



□ Did you know?

The Torino Area is the only Italian Province where there is a complete automotive production chain from the drawing board to the final assembly.







IVECO, FPT Industrial and NIKOLA presented in Torino the prototype NIKOLA TRE, their first battery electric heavy commercial vehicle (BEV) designed for European markets. The prototype is also a step towards Hydrogen Fuel Cell commercial vehicles (FCEV). The integration of Nikola design on Iveco S-WAY was jointly carried out by Nikola and **Italdesign**. Torino is already active in the assembly of the vehicle's batteries and in the construction of the electric axles and is ready to play an important role thanks to the involvement in the project of FPT Industrial, a branch of **CNH Industrial** and pioneer in the research and application of alternative fuels. FPT will co-interpret the motor propulsion of the vehicle by combining high-technology and engineering innovations for sustainable transport. The electric version of Nikola TRE will be on the market in 2021, while the hydrogen one will be delivered in 2023.

R&D and innovation play an important role: 43.7% of the Torino-Piemonte automotive enterprises invest more than 2% in R&D, (31% invest from 2 to 5, 7.7% from 6 to 10, 5% more than 10%) and are responsible for **more than 50% of the European patents granted to inventors in Piemonte**.

The region's strong expertise in the field of engines and the **approach to sustainable mobility** is strengthened by the presence of Fiat Research Center and FPT Industrial that develop new generations of engines, with high-performances in terms of sustainability and respect for the new rules on emissions and greenhouse gas (GHG) reduction, in their research centers based in Piemonte. In addition, more than 350 companies perform activities in the "green tech" field.

Private companies, the University of Torino and the Politecnico di Torino are engaged in several R&D activities dedicated to the **development of the future propulsion systems such as the new generation of diesel engines** able to reduce GHG emissions by downsizing the engine mass and weight, while increasing the overall engine performance; **evolved electronic systems** in order to manage and control the engines' performance; **hybrid engines**, created to reduce fuel consumption and to open up the path towards full electric mobility.

Furthermore, Piemonte was the first Italian region to formally establish innovation hubs as new industrial policy tools to support the innovative skills and competitiveness of regional research system players. The Region supports industrial competitiveness and promotes the aggregation of small and medium enterprises, large companies and research organisations to share knowledge and make innovative product and service investments converge along common design and development lines.

The new frontier of the sector: integrated e-mobility

The evolution of the mobility sector is aimed at developing new solutions for passengers and freights that can be resource-efficient, climate-and-environmentally-friendly, safe and seamless.

It is possible to find in Piemonte the necessary know-how for electric vehicle development, integration, production and all the solutions and services needed for full **electrical mobility**, including energy storage and distribution. In addition our local companies are working on **innovative smart mobility concepts** integrating vehicles and infrastructure through the application of **advanced digital technology**.

Companies are indeed developing more and more distinctive technologies and solutions in the fields of **connectivity, autonomous driving, sharing mobility, sensor fusion, Big Data and Internet of Things** projecting the whole territory towards new challenges and new consumer markets.

The smart mobility challenge

On-road mobility is undergoing a revolution, plain and simple: in the near future electric and/or hybrid vehicles will be the leading players, connected to each other and to the infrastructure. This will significantly change the way vehicles will be designed, engineered, produced and used and therefore, the transportation of people and things will soon be totally transformed.

The implementation of new mobility models and the related services in Piemonte are already creating stimulating opportunities for development: new partnerships and forms of cooperation among companies are already facing and winning this challenge.

City of Torino: Lab for autonomous and connected driving in an urban environment

Torino is one of the first cities in Italy allowing the testing of autonomous vehicles on its public roads and not only in areas closed to traffic. Vehicles equipped with Level 3 (Hands-off, feet-off, eyes-off, brain-on) solution can be tested, with the purpose to extend to Level 4 (brain-off) and Level 5 vehicles (no driver there at all) in the future. The memorandum, signed in April 2018, is in the framework of "Smart Road", a national project involving all road mobility stakeholders willing to test solutions for future mobility, specifically cooperative, connected and autonomous driving: the City of Torino will give companies, public institutions and universities signing the memorandum (FCA Group, GM Global Propulsion Systems, 5T, ANFIA, Politecnico di Torino, University of Torino, Telecom Italia, Torino Wireless Foundation, Open Fiber, Employers' Association of Turin, Italdesign Giugiaro, FEV and Unipol) access to dedicated roads and telematics infrastructures, that already exist or that will be built on purpose, in line with international standards and protocols where in place.



The City of Torino is the first public authority the 5G Automotive Association (5GAA) is officially partnering with in order to strengthen the collaboration between industry and the public sector and to facilitate the dialogue to drive innovation in mobility and transport. 5GAA is a global association with over 130 member companies from the automotive and ICT industries leading the definition and adoption of the future mobility ecosystem.





PIEMONTE, HOME TO THE MOBILITY OF THE FUTURE

Electric, connected, autonomous and shared. The car of the future is already a reality in Piemonte, where the liveliness and level of experimentation of the automotive community are unique in the world of mobility.

The German company **FEV** is testing its autonomous car prototype here, while in the **ICT Innovation Hub** the company **Bylogix** has developed, with the funding of the Regional Government, the VeGa electric car which is equipped with a vision system that uses artificial intelligence to interpret the environment surrounding the vehicle and to take the right decisions, constantly learning from experience. Modularity is instead the main feature of the new **FIAT Centoventi** concept car by **FCA**: totally electric, reconfigurable and customizable, it represents a new approach not only to mobility, but also to design and production. The latter is a fundamental aspect also shared by the project of the Chinese startup **X Electrical Vehicle** (XEV) which will produce in Piemonte its **LSEV** electric microcar, the first mass-produced one using 3D printing techniques.

It is also important to mention the FCA Battery Hub. It is a new step in FCA's e-mobility strategy, after the recent agreements on the electrification services front. It will be a real battery assembly center in a dedicated building where the most cutting-edge technologies will be used with modular and flexible processes also with the use of collaborative robots in symbiosis with the operators. The FCA Battery Hub will also host an area for training activities, as well as a pilot process useful in the prototyping will also function as a technologically advanced control of the strategic components supplied by the leading manufacturers in electric mobility. Similar electronic checks will be made to manage Thanks to its expertise in assembly, Comau is partner of this initiative.

Another important announcement is that the new FIAT 500 electric will be produced in Mirafiori and the new GranTurismo and GranCabrio will be the first 100% electric models of the Maserati brand to be produced in the Torino production center.

Leading the **protection** of future connected vehicles

Thanks to the presence of major global players such as FCA and Telecom Italia and of a multitude of leading companies in both the automotive and ICT sectors, Piemonte has all the due skills in the field of **cyber security** and guarantees constant cooperation between large producers, start-ups, SMEs, universities and research centers.

In Piemonte, companies like **Aizoon** and **Reply**, both active in the field of Big Data and IoT, and start-ups like **Drivesec** which develops cybersecurity solutions for the automotive and IoT sector and international companies, interact with main players in the automotive sector like **Marelli** and **FCA**, to design, develop and produce safe and secure systems aligned to the standards and norms and according to the concept of security by design.

5G adoption tops up this fertile environment. Torino is in fact the first Italian city to be served by the 5G network and it is also the first city where 5G is tested for smart mobility. It is the so-called **TIM 5G Digital Business platform** which can help to guarantee greater road safety, especially for cyclists and pedestrians, to optimize travel times and to improve the sustainability of cities. The new 5G architecture, in addition to making driving in the city more pleasant, will allow motorists to be notified in advance of any critical issues. The **Urban Geo-referenced Alert system**, a joint venture between TIM, FCA, Links, City of Torino with 5T and Politecnico di Torino, will warn drivers of possible dangers and risks such as road works, speed limits and traffic jams. The cars will be able to communicate with each other by signalling the approaching vehicles to the presence of the danger which is not yet visible.

Piemonte Capital of Advanced Manufacturing

In Torino a former industrial area has become the new Italian and European reference point for Industry 4.0: it is the **Manufacturing Technology Center** (MTC), the new headquarters for advanced manufacturing. It is a project worth **38 million €** born out of the collaboration of 5 different bodies: Regione Piemonte, Politecnico di Torino, Torino Chamber of Commerce, City of Torino and University of Torino.

This former industrial area of approximately 300 thousand square meters has been transformed into a technological center dedicated to **applied research**, **vocational training**, **innovation and technology transfer**. The Center hosts research activities, technological demonstrators, "proof of concept" prototype laboratories, functional facilities to provide business services and a vocational training center, a real "Makers' School" unique in Italy.

The initial core of the MTC is the **Competence Industry Manufacturing 4.0** (CIM.4.0): one of the

competence centers foreseen by the national Industry 4.0 Plan, financed by the Ministry of Economic Development and by the 24 member companies. The center will develop and provide innovative "pilot lines" for different manufacturing technologies, specifically in the areas of additive manufacturing, robotics, new materials, Big Data, Internet of Things, cybersecurity and process efficiency.



ACADEMIC & INDUSTRIAL ENHANCEMENT



Thanks to the presence of the **Politecnico di Torino**, the **University of Torino** and other specialised research centers, Piemonte provides the necessary support to design and R&D activities.

The **Politecnico di Torino** conducts applied research in conjunction with companies and participates in programmes at a national and European level.

Collaborating for R&D purposes is an opportunity very much valued by automotive companies. Its Departments of Energy "Galileo Ferraris" (DENERG), Mechanical and Aerospace Engineering (DIMEAS), Applied Science and Technology (DISAT), Electronics and Telecommunications (DET), Control and Computer Engineering (DAUIN), Management and Production Engineering (DIGEP) and Environment, Land and Infrastructure Engineering (DIATI) are the most relevant for Automotive business.

Some of the Interdepartmental Centers can offer a comprehensive, multidisciplinary support for the automotive sector, like:

- CARS (@PoliTo Center for Automotive Research and Sustainable mobility) is engaged in research in the field of Automotive Engineering and Intelligent Transportation Systems, especially in five areas of interest: Green Vehicles, Safe & Integrated Mobility, Affordability & Competitiveness, Urban Mobility and Logistics, New Mobility Solutions based on sharing economy principles.
- Ec-L (Energy Center Lab): in the framework of the Politecnico Energy Center Initiative (ECI), the multidisciplinary laboratory works to develop models and scenarios for the new energy transition. Its goal is to design energy systems which are increasingly interconnected and to predict their behavior and impact ondifferent spatial and temporal scales.
- IAM (@PoliTo Integrated Additive Manufacturing): this Center seeks to create a multidisciplinary research platform for additive manufacturing.
- J-Tech (Advanced Joining Technology center): it is striving to become a top-class research hub

- for advanced joining technology, with expertise in high-temperature and adhesive-based joining, laser and friction stir-welding, characterisation techniques such as X-Ray tomography and other custom-built testing facilities.
- PEIC (Power Electronics Innovation Center): research and technology transfer center engaged in power electronics. Its main goal is to provide efficient and reliable power conversion solutions for strategic applications such as: hybrid and electrical vehicles, infrastructures for electrical battery charging, electrification of aircrafts, electrical energy production from renewable sources and advanced systems for industrial production.
- SmartData (@PoliTo Big Data and Data Science Laboratory) focuses on Big Data technologies and Data Science approaches. Since these two areas of activity are highly multidisciplinary, the Center brings together experts in Machine Learning, algorithms and data modelling that work in close cooperation with managers and domain experts from various engineering disciplines. They work together on theoretical problems and practical applications in industry.

The **University of Torino** adopts a cross-competence approach to research in the transportation sector, with multidisciplinary teams from different scientific areas, ranging from hard sciences to medicine and humanities.

Automotive companies can also take advantage of the asset of major research university infrastructures that can be directly accessed to conduct innovation activities, such as test and measurements, prototyping, chemical analysis, big data analysis.

Main research areas of the University of Torino for the automotive industry

Manufacturing materials

Advanced new materials; Attrition materials for brakes; Coatings for wearing parts; Diamond microfabrication and graphene synthesis for the development of new sensors; Laser beam welding of innovative steels; Materials for hydrogen storage; New coatings for engine valve seats; Structural adhesive bonding of aluminum components; Synthesis and characterization of CNTs and graphite nanoplatelets polymer composites via high dispersion of nanocarbon fillers within polymers hosts; Thermoelectric materials.

Renewable and non-polluting energy

Automotive aerodynamics, Fluid mechanics of the engine; Catalysts for hydrogen production and purification, catalytic upgrading of waste materials for fuel production; Development of catalysts for low temperature methane steam reforming; Fuels from renewable sources.

Logistics

Car pooling; Geo social reality augmentation in dynamic mobile environment; Interaction oriented frameworks and related infrastructure for social computing, commitment based coordination protocols; Internet of things, semantic web; Design and time dependent tariff for optimal parking management; Mobile Communication Networks, Car to car Networking, opportunistic networking.

Safety

Applied ergonomics, Formal methods in computing; Theoretical and computational aspects of new functional spaces in multivariate numerical approximation of data and functions.

Electric vehicles and autonomous driving

Computer vision; Artificial Intelligence; Behavioral models; design of electric agricultural machineries; Smart Farming 4.0.

Industry organization

Smart manufacturing; Organizational dynamics: health and quality of life in the work context; Behavioral changes.

· Regulatory issues, politics

Automotive market analysis; Organizational and technological innovation; Legal accountability of Al systems.



- **Technology transfer** from research to SMEs through Innovation Hubs
- Collaborative research on major challenges through **Technological Platforms**: Intelligent Factory, Life Sciences, Bioeconomics, Aerospace, Automotive
- Supporting industrialisation of research results, through relevant investment programs aimed at industrializing partially acquired results of R&D activities

With a long tradition in industrialisation and innovation, Piemonte has launched the **Smart Specialisation Strategy** (the Strategy – S3), in the framework of the Cohesion Policy 2014-2020 and the Europe 2020 Strategy. The primary goal is to strengthen the R&D system as one of the main pillars for fostering entrepreneurial explorations in the most promising sectors. The Strategy aims to transform the traditional industrial sectors through the discovery of new and emerging sectors supporting ideas, products, services and models, to provide new answers to social needs.

The subsidy system in Piemonte focuses on both the start-up of new initiatives and on the development of existing companies.

The subsidies, which can take the form of soft loans, non-repayable or free-of-charge grants, guarantee support to companies based on European regulations governing public aid, and vary according to the type of beneficiary, investment and nature of expenses.

The system is one of the richest and most effective among the European developed regions, addressing all the relevant industrial sectors, focusing in particular on research and innovation, manufacturing, sustainability and energy efficiency. The broad range of official sources and subsidised tools allows Italian and foreign businesses to cover various stages of growth and development.

BUSINES! MINDSET



"Piemonte Automotive" is a special project promoted by the Regione Piemonte, financed by **ERDF** – **European Regional Development Fund** and managed by the Piemonte Agency, providing international players a free preferential channel to meet and start business with **top class automotive selected enterprises** based in **Piemonte**, Italy. The Team makes an assessment of buyers' needs and technicians' requirements from all over the world and provides them with:

- top class skills and unique manufacturing know-how
- capable suppliers who can deliver on time high-quality parts and products at competitive prices and leading edge technologies and solutions
- thanks to new technologies and platforms virtual meetings can also be arranged
- technologically qualified and competitive supply chains sharing commercial objectives, target clients and strategies
- technical working groups where local enterprises and foreign companies work together to develop projects aligned to the expectations of their international players

The project Team's assistance is supply chain focused and completely free of charge for international players. It ascertains their outsourcing needs and arranges b2b meetings according to their technical requirements with the most suitable partners - in Piemonte or on their premises -, visits to local companies to discover the region's automotive sector, participation to international events and trade missions to connect demand and supply. Thanks to new technologies and platforms virtual meetings can also be arranged.

For more information on the **automotive** sector in Piemonte and its business opportunities, contact the **Project Team**:

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Piemonte Agency

the one stop shop for business and investment

Piemonte is the 1st
Italian region to have established a regional Agency dedicated to inward and outward investment



Piemonte is the 1st Italian region to have created a dedicated financial tool for attracting and financing foreign companies willing to locate in Piemonte: the Regional Investment Contract.

To get to know about the local economic system, find information on business opportunities in the area and identify a quality destination for direct investment, Piemonte Region offers and entry point: Piemonte Agency.

THE AGENCY PROVIDES A COMPLETE RANGE OF FREE SERVICES TO FOREIGN COMPANIES:

- looking to locate in Piemonte
- searching for suppliers and partners in a variety of sectors
- · needing technical training on foreign trade

THE AGENCY IS A RELIABLE PARTNER THAT GUARANTEES:

- responsive and tailored assistance at all stages of the investment project
- matchmaking of the regional production offer with the needs expressed by international markets
- targeted activities to connect highly qualified local companies with foreign partners
- training in the field of internationalization
- international cooperation projects

Piemonte Agency guarantees complete assistance to foreign companies willing to invest in Piemonte.

The Agency can advise on every aspect of starting and running a business in Piemonte, providing assistance at every stage of the project. In addition, the Agency acts as a liaison office between foreign investors and public authorities, academic/research networks, and industry. Foreign companies interested in establishing a presence in Piemonte can find investment opportunities such as R&D centres, M&A operations, technical partnerships and/or greenfield operations especially in several automotive innovative technologies.

investment@centroestero.org

SERVICES FOR TRADE & INVESTMENTS

Services for investors

BUSINESS ASSESSMENT

- Insights on economic and industrial climate and key industries
- Market data and tailored information to launch your business
- Selection of potential partners
- · Identification of service providers
- Detection of R&D projects and opportunities
- Identification of funding schemes, incentives and grants programmes, legal/labour/tax procedures

BUSINESS SET UP

- networking with the local institutions, R&D networks, science and technology parks, innovation centres and universities
- support in obtaining authorisation, visas and permits
- advice on legal, financial and corporate structure in cooperation with the partner network
- selection of grants and incentives in cooperation with the partner network
- site selection and site visits
- help in recruiting specialised personnel onsite

LOCATION OPPORTUNITIES DETECTION

Piemonte Agency performs real-estate selection and organises tailor-made visits.

IDENTIFICATION OF INCENTIVES & GRANTS

Piemonte Agency provides help in identifying the most appropriate available incentives and grants for your business.

Divided by framework of application, appropriately combined, the incentives can cover the entire range of business investment expenses:

- start-up
- · investments in machinery and plant
- equipment
- hiring and training of personnel
- · research and development

The service is provided in collaboration with the Regional Government and Finpiemonte.







www.piemontethe place to invest. it







