

EMILIA-ROMAGNA.WE MAKE THE FUTURE TOGETHER.









When you think about Italy, what is the first thing that comes to your mind? A red Ferrari? A racing Ducati? Parmigiano-Reggiano cheese, Parma Ham, or balsamic vinegar from Modena? Maybe it's the masterpieces of Fellini and Antonioni or the voice of Luciano Pavarotti. Maybe it's our education system, since the first Western University and the first preschools were born here. I could go on and on. You may not be aware of it, but if these excellences come to mind when you think about Italy, then you are thinking about our region, Emilia-Romagna.

Our region is made up of women and men who work together, always looking ahead: Emilia-Romagna is the first region in Italy for innovation according to the European Scoreboard 2021 and to the Transatlantic Subnational Innovation Competitiveness Index 2022. It is no coincidence that we are now home to the fourth most powerful supercomputer in the world, called LEONARDO, which will process and store strategic data about every field of research. In the 'Tecnopolo Manifattura' in Bologna - along with LEONARDO - a European "data valley" is growing into an international hub that houses the ECMWF Data Centre for Medium-Range Weather Forecast, several research centres (e.g. INFN-CNAF, CINECA and CNR), the Agenzia ItaliaMeteo and the iFab - International Foundation on Big Data and Artificial Intelligence for Human Development, with 1,500 researchers from around the world.

There is so much more to discover. In this land of beauty, you can visit UNESCO sites - our Apennines, our cities of art, the Po River Delta - or enjoy our coasts, attend the many international cultural and sport events we host here, from movie festivals like Cinema Ritrovato to World F1 and Moto GP. Check us out on the map, we are the junction that connects the crossroads between Northern and Southern Italy, a land of cultural and commercial exchange, which attracts young people, businesses, and international institutions and we boast the highest export per inhabitant in Italy. We also offer one of the most efficient health care systems in the country.

If our region were a car, we could say that it is powered by a very special engine: collaborative local institutions, cutting-edge research centres and universities supported by an education system that works in collaboration with businesses, widespread culture of industrial relations, enhancement of human capital and attention to sustainability. We do great things together, such as designing how Emilia-Romagna will be in 2030 with a Pact for Work and Climate - signed in 2020 by all the main regional actors - sharing a vision of a sustainable future for this land and committing together to achieve it.

Come and visit our excellent enterprises, well-structured in local supply chains but open to the world. Our special spirit is evident in everything we do: from automotive to packaging industry, biomedical, agribusiness, fashion, and ceramics. And we are now working hard to assert Emilia-Romagna as a data valley and to become a worldwide reference for aerospace and electric vehicles.

We look forward to seeing you in Emilia-Romagna. Let's make the future together.

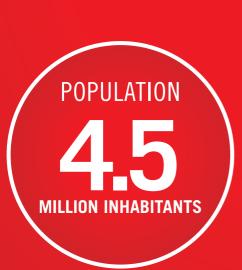


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INTRODUCTION







- 1 REGION
- 1 METROPOLITAN CITY
 BOLOGNA
- 8 PROVINCES:
 - FERRARA
 - FORLÌ-CESENA
 - MODENA
 - PARMA
 - PIACENZA
 - RAVENNA
 - REGGIO EMILIA
 - RIMINI
- 330 MUNICIPALITIES

EMILIA-ROMAGNA







A REGION OF WELLBEING

- BEAUTY: plenty of UNESCO sites, such as the Porticoes of Bologna inscribed as World Heritage site in 2021, Ferrara and its Po River Delta Park, Ravenna, Modena, and the Apennines
- INCLUSION: social exclusion rate lower than in Italy and Europe
- QUALITY OF LIFE: employment and GDP per capita higher than in Italy and Europe; top quality health system and services; strong cultural offer



A WELL CONNECTED REGION

- TRANSPORT INFRASTRUCTURES: a strategic position connecting Northern Europe and the Mediterranean area
- DIGITAL INFRASTRUCTURES: top smart cities; broadband connection and Digital Economy and Society Index (DESI) higher than the national average; the Municipality of Bologna received the Digital Agenda Award 2021 in Italy



A REGION OF KNOWLEDGE AND RESEARCH

- RESEARCH AND INNOVATION: 1st region in Italy for innovation (Regional Innovation Scoreboard 2021, Itif 2022)
- EDUCATION: 7 universities with 166,000 students; 491 courses and 248 master degrees
- TALENTS: a regional law and specific services to attract and retain talents and investments
- INNOVATION ECOSYSTEM: a unique High Technology Network of over 90 research labs and innovation centres integrated with Technopoles and "Clust-ER" Associations
- DATA VALLEY: world-class supercomputers and data centres, including LEONARDO, the 4th most powerful computer in the world (Top500, Nov 22)



A SUSTAINARIE REGION

• A REGIONAL <u>PACT FOR WORK AND CLIMATE</u>: a shared overall strategy up to 2030 for regional sustainable development



A COMPETITIVE AND INTERNATIONAL REGION

- ECONOMY: a strong manufacturing sector that employs 25.2% of the total number of employees in Emilia-Romagna, while the Italian average is 18.6% and the European one is 16.1%
- INTERNATIONALISATION: 1st Italian region for export per capita
- ATTRACTIVENESS: open region with high levels of inward and outward internationalisation and with strong incentives for new investments



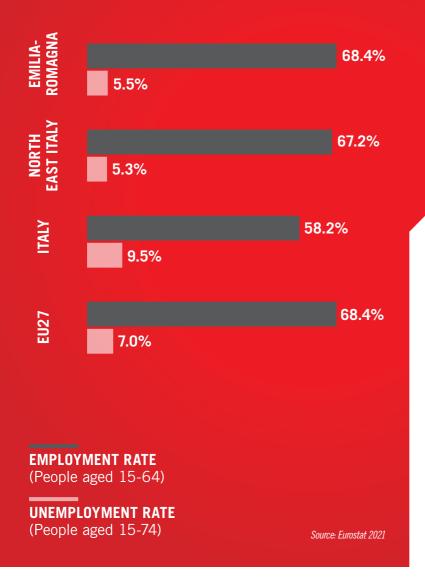
A REGION OF EXCELLENCES

 GLOBAL LEADER in industrial machinery (e.g. packaging) and ceramics, boasting world leading motor and food valleys, a growing health and wellness sectors, and home of successful creative brands

A REGION OF WELLBEING EMPLOYMENT, INCLUSION AND QUALITY OF LIFE

The Region's development model ensures both economic competitiveness and social cohesion. It has successfully pursued **job creation** as its **top economic priority** and the employment rate in 2021 was well over the Italian and European rate.

LEVELS OF EMPLOYMENT HIGHER THAN THE NATIONAL AND EUROPEAN AVERAGE





POLICIES

The Pact for Work and Climate signed in 2020 by 55 local stakeholders aims at generating high-value jobs, combating inequality and taking Emilia-Romagna through environmental transition, thereby helping to achieve the objectives of the 2030 Sustainable Development Agenda, in particular reaching carbon neutrality by 2050 and 100% renewable energy by 2035.

Small and medium-sized enterprises (SMEs) are the driving force of the economy (about 75% of total employees) fostering an extraordinary spread of wealth across the entire region. Emilia-Romagna is leading in terms of per capita income in Italy, and, for years now, it has been classified as one of the richest regions in Europe.

GDP PER CAPITA (EURO - PPS)

EMILIA-ROMAGNA 36,800

+13.5% vs EU27 AVERAGE ₹ **30**,100

§ **32,**400

Source: Eurostat 2021

HIGHER LEVEL OF SOCIAL COHESION

Social cohesion is also a strong regional asset as shown by the low percentage of the regional population at risk of poverty and social exclusion.

RISK OF POVERTY OR SOCIAL EXCLUSION Source: Furnstat 2020

11.0% EMILIA-ROMAGNA

25.3%

21.5% EU27 **QUALITY OF LIFE NATIONAL RANKING**

Bologna is the first city in Italy for the quality of life.

7 cities rank among the first 34 out of 107 cities: Bologna (1), Parma (9), Reggio Emilia (13), Modena (17), Piacenza (24), Ravenna (30), Forlì-Cesena (34).

Source: Sole240re, 2022

Piacenza, Ferrara, and Ravenna are the top three cities in Italy for quality of life for young people (18-35 years old)

Source: Sole240re 2021

Emilia-Romagna performs very well in the Better Life Index (BLI): The region is very well positioned at national level on many parameters: Access to services (1/21), Civic Engagement (2/21), Jobs (3/21), Income (3/21), Housing (4/21), Education (5/21), etc.

Emilia-Romagna is the leading Region in Italy for the efficiency of the health system:

Source: OECD 2020

1st

First Italian region for the efficiency of the health system
Source: Demoskopika. 2020

1st

First Italian region for Essential Assistance Levels (LEA*) in the 2010-19 period.

* LEA (Livelli Essenziali di Assistenza) are services and benefits that the National Health Service is required to provide to all citizens, free of charge or upon payment of a participation fee (ticket), with the public resources collected through general taxation.

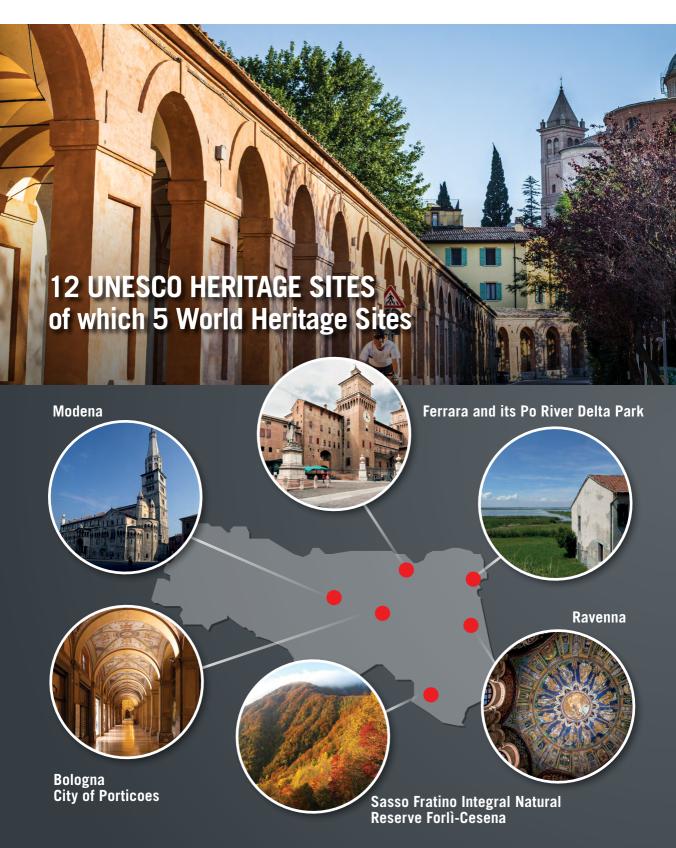
Source: Fondazione GIMBE - Report 2/2022

8th

Istituto Ortopedico Rizzoli 8th World's Best Hospital Specialised in Orthopaedics Source: Newsweek, 2022

BEAUTY, CULTURE AND NATURAL RESOURCES

The huge and diversified cultural and natural heritage of Emilia-Romagna qualifies the region as one of the most beautiful in Italy and in the world, home of UNESCO sites, historical cities, mountains, beaches, and widespread top-quality entertainment.



Tourists visits in Emilia-Romagna are increasing again.





TOURIST FLOWS
Source: Unioncamere Emilia-Romagna 2021

oodioc. Onioneamere Emilia Nomagna 2021

10.4 MILLION

ARRIVALS

+39.7% vs 2020

50.0 MILLION

OVERNIGHT STAYS

+32.6% vs 2020

PORTICOES OF BOLOGNA

Declared World Heritage Site in 2021 by UNESCO

NETWORK OF NATURAL PARKS 2 national parks 1 interregional park 14 regional parks 17 natural reserves

158

Sites of the European Nature 2000 Network

530

Museums

272

Archaeological and monumental sites

202

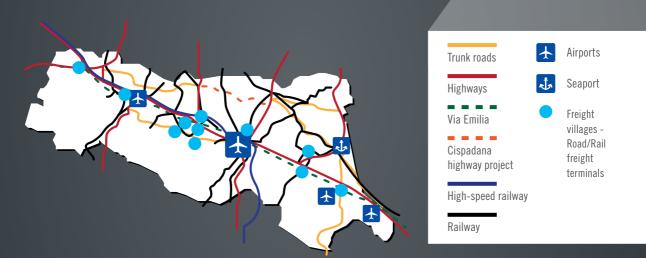
Theatres

A WELL CONNECTED REGION

TRANSPORT INFRASTRUCTURE

The Emilia-Romagna region is a bridge at the crossroads of the communication routes connecting Northern Europe with the Adriatic and Mediterranean countries. The regional logistics system for handling freight is one of the most advanced in Italy. Bologna is a major road and railway junction between Northern and Central-Southern Italy.

The local transport network is well organised throughout the entire region.



VIA EMILIA is the road that crosses the region from southeast to northwest and it is surrounded by a high concentration of businesses and logistics hubs

4 STRATEGIC INTERNATIONAL AIRPORTS: the intercontinental "Guglielmo Marconi" Airport of Bologna (the region's main air transport hub), the "Federico Fellini" Airport of Rimini, the "Giuseppe Verdi" Airport of Parma, the "Luigi Ridolfi" Airport of Forlì

MAIN FREIGHT VILLAGES: Bologna and Parma (CEPIM). Main Freight Terminals: Piacenza, Dinazzano (RE), Rubiera (RE), Marzaglia (Modena), Villa Selva (Forlì), Ravenna

HIGH-SPEED TRAINS CONNECT THE REGION WITH MOST MAJOR ITALIAN CITIES from Bologna to Turin - 2:14h, Milan - 1:04h, Florence - 0:37h, Rome - 2:03h, Naples - 3:26h

THE PORT OF RAVENNA is one of the top ports in the country

Bologna Airport

www.bologna-airport.it



4,100,000 passengers in 2021 (+63.7% vs 2020)

113 destinations

50.1 tons of cargo traffic in 2021 (+15.5% vs 2020)

Ravenna Port

www.port.ravenna.it



27.3 million tons of goods handled in 2022 (+1.1% vs 2021)

New investments in infrastructures and renewable energy in the Port area

CAAB

www.caab.it



CAAB is leader for fruit and vegetable distribution in Italy, comprising warehouses for frozen and fresh goods, logistics platforms, and offices. CAAB is part of the new Network of the Regional Agri-food Centres - also including Parma, Cesena, and Rimini - that aims to strengthen effectiveness and internationalisation of the distribution system

ER.I.C. Emilia-Romagna Intermodal Cluster www.ericintermodal.it includes the main regional transport and logistics actors and aims to develop collaborative activities and to promote the Emilia-Romagna region's system of intermodal platforms on the national and international stage.

DIGITAL INFRASTRUCTURE



Digital development has been a regional policy priority for over 20 years. Emilia-Romagna has a **high broadband coverage** due to a digital infrastructure that ensures a high level of connectivity throughout the entire territory.

The regional **Digital Economy and Society Index (DESI)** is above the national average (*Digital Agenda Observatory 2021, "DIG Dipartimento di Ingegneria Gestionale Politecnico di Milano"*). The Municipality of Bologna was awarded the Italian Digital Agenda Award 2021. Moreover, as for Italian **Smart Cities rankings**, the region is always very well positioned:

5 cities (out of 107) in the Top 15 Smart City Index, Ernst & Young 2020 5 cities (out of 108) in the Top 15 I-City Rank, 2022

HOUSEHOLDS WITH BROADBAND ACCESS

90%
EmiliaRomagna

88%
Elaly

LEPIDA: the broadband network for Emilia-Romagna's public administrations provides highspeed connectivity throughout the entire region boosting efficient e-government services for users and companies, www.lepida.net

The Digital Agenda of Emilia-Romagna 2020-25 with the "Data Valley Bene Comune" strategy aims to invest 200 million euro and to be a 100% digital and inclusive region, by carrying out the following actions: reducing the digital divide in mountain areas, boosting digital knowledge, networks and connectivity, Public Administration and digital services. digitale.regione.emilia-romagna.it

A REGION OF KNOWLEDGE AND RESEARCH

At the heart of the Emilia-Romagna innovation ecosystem there is a large **number of public and private actors** who invest their resources and collaborate to exploit research results, to develop new knowledge, to adopt new technologies and to bring innovation to all economic and social sectors.

The region is a land of old and prestigious universities, the most important national research institutions, leading global companies and specialised competitive small and medium-sized enterprises. Emilia-Romagna invests in **research**, **innovation**, **and skills** to strongly impact all production sectors, open new market opportunities and create high-quality jobs.

Emilia-Romagna also attracts **students and business from abroad** in an innovative and vibrant ecosystem with consolidated partnerships and collaborations between companies and research organisations.

EDUCATION

The university and education system is widespread providing highly skilled human resources and attracting international talents.

7 UNIVERSITIES

- University of Bologna, "Alma Mater Studiorum", with campuses in Bologna, Forlì, Cesena, Ravenna, and Rimini, is the oldest in the Western world and the first in Italy according to the World University Rankings 2023 THE - Times Higher Education
- University of Ferrara
- University of Modena and Reggio Emilia
- University of Parma
- Cattolica University of Piacenza
- Piacenza campus of 'Politecnico di Milano'
- Johns Hopkins University SAIS Europe

Many specialised schools and advanced courses are available, some examples are Bologna Business School (Master/MBA), International Data Science PhD, Advanced school in Food Safety, MUNER (Motor vehicle University), corporate academies.

STUDENTS of which 12,810 foreigners

DEGREE COURSES, both first and second cycle degree programmes

MASTER COURSES, both first and second level Source: Almalaurea - Universities of Bologna, Ferrara, Modena and Reggio Emilia, Parma

GOVERNANCE - EDUCATIONAL INFRASTRUCTURE: EMILIA-ROMAGNA EDUCATION AND RESEARCH

- Integration among 544 schools Miur, 2021
- 209 accredited training providers RER 2021
- Integration among universities, research organisations and the economic system
- 34 courses provided by 7 Higher Technical Institutes (HTI) run by foundations www.itsemiliaromagna.it

"Emilia-Romagna Education and Research" is organised in four sections

- 1. Education and vocational training centres offering job-oriented three-year courses
- A polytechnic network of higher education centres providing technical and scientific skills. This
 includes 7 Higher Technical Institutes (HTI) Foundations offering 34 2-year post-diploma courses designed
 to train specialists
- 3. **Higher education and research**: specialised training, research grants, PhD scholarships and actions to support new innovative companies
- 4. **Employment and skills**: actions to foster innovation, digitalisation, internationalisation and sustainability projects of companies, to support people transitioning from education to the labour market, or between two different jobs, and to update workers' skills







University of Bologna



University of Ferrara



University of Modena and Reggio Emilia



University of Parma



Piacenza campus of "Cattolica University"



Piacenza campus of "Politecnico di Milano"



Johns Hopkins University

1st region in Italy for Innovation

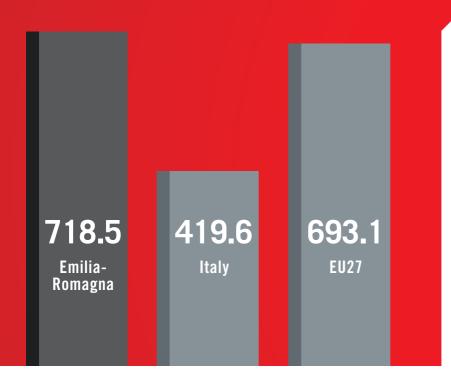
Source: European Innovation Scoreboard 2021 Transatlantic Subnational Innovation Competitiveness Index 2022

The Regional Innovation Scoreboard 2021 by the EU Commission confirms the performance of the region as a "strong" European Innovator. Although Italy as a country is still considered a "moderate" innovator, Emilia-Romagna shows its ability to be included among the most advanced European regions. The result is confirmed by the Transatlantic Subnational Innovation Competitiveness Index 2022 (ITIF) where Emilia-Romagna is the only Italian region ranked within the Top 20 in a list which includes the US, Canada, Germany and Italy.

Research expenditure per inhabitant in Emilia-Romagna — including both the public and private sector — is the highest in Italy, with 44.2 thousand employees (full-time equivalent) and a total expenditure of 3.2 billion euro (Eurostat, 2020). Research activity is carried out by universities, research centres, a network of industrial research labs, dynamic corporates and small and medium companies. More than one thousand innovative start-ups complete the picture.

Emilia-Romagna ranks 1st in Italy for gross expenditure in R&D per inhabitant

Source: Eurostat 2020 - Values in euro per inhabitant



R&D EMPLOYEES (FULL-TIME EQUIVALENT), PERCENTAGE ON THE TOTAL EMPLOYMENT

Source: Eurostat 2020

2.22%

EMILIA-ROMAGNA

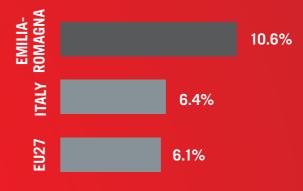
1.57%

1.55%



The region also boasts a high percentage of employees in high and medium-high technology sectors

Source: Eurostat 2021



The high number of patent applications also shows the strong orientation towards innovation of the regional ecosystem





INNOVATION ECOSYSTEM

Regional innovation policies support R&I activities carried out by enterprises, promote the development of industrial research laboratories and innovation centres – mainly located in the technopoles and organised in the "High Technology Network", foster regional "Clust-ER" associations (including private enterprises and public bodies) along with innovative business ideas and initiatives.

The Emilia-Romagna High Technology Network Over 90 industrial research laboratories and innovation centres www.retealtatecnologia.it

10 Technopoles and the "Technopolo Manifattura I Data Valley Hub" in Bologna

9 "Clust-ER" Associations with more than 700 members among public and private entities, **1 Big Data Association** and **1 Motor Vehicle University (MUNER)**

"in-ER", a unique network of +30 INCUBATORS/ACCELERATORS in-er.it

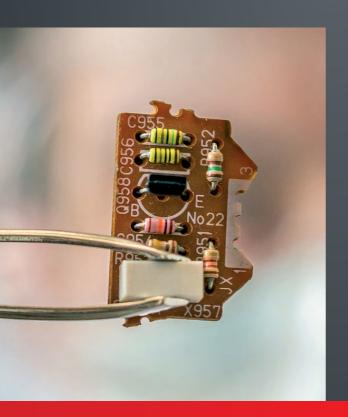
+70 public and private actors supporting innovative entrepreneurship

EmiliaRomagnaSTARTUP: +500 startups in the network www.emiliaromagnastartup.it

14 Fab Lab

10 Open Labs for digital innovation

ART-ER – Attractiveness Research Territory



ART-ER ATTRACTIVENESS RESEARCH TERRITORY

www.art-er.it

ART-ER is the Emilia-Romagna Joint Stock Consortium whose members are the Emilia-Romagna Region, the six local Universities, research centres (CNR, ENEA, INFN), the regional Union of the Chambers of Commerce and other local stakeholders. Its role is to foster the region's sustainable growth by developing innovation, knowledge, attractiveness and internationalisation of the region.

As for research and innovation activities, the Consortium is at the core of the regional innovation ecosystem, animating it through joint activities and open innovation actions involving all local stakeholders as well as coordinating and supporting the High Technology Network, the Clust-ERs and the Technopoles.

"Clust-ER" ASSOCIATIONS AND THE EMILIA-ROMAGNA HIGH TECHNOLOGY NETWORK

Clust-ER Associations <u>art-er.it/clust-er</u> are communities of public and private bodies (research and training centres and businesses) created to support the competitiveness of the most important production systems in Emilia-Romagna. The Clust-ER Associations rely on the innovation capacity of the entire innovation system: within the Clust-ERs, research laboratories and innovation centres that make up the **High Technology Network** <u>www.retealtatecnologia.it</u> team up with companies and higher education organisations to face common challenges, develop strategic projects and multiply opportunities.























The National Research Council - **CNR** and the Italian National Agency for New Technologies, Energy and Sustainable Economic Development - **ENEA** own and operate **a large number of laboratories in the region**. **Universities** make a major contribution with researchers working in technical/scientific fields. Other important research institutes are the National Institute for Nuclear Physics - **INFN**, the National Institute for Astrophysics - **INAF**, the National Institute for Geophysics and Volcanology - **INGV** and **CINECA**, the largest Italian computing centre.

THE TECHNOPOLES AND THE EMILIA-ROMAGNA HIGH TECHNOLOGY NETWORK

The **Technopoles** <u>tecnopoli.emilia-romagna.it</u> are **11 infrastructures** located in 20 facilities throughout the Emilia-Romagna region. They host and organise activities and services for industrial research, experimental development, and technology transfer. They are home to the industrial research laboratories and innovation centres of the **Emilia-Romagna High Technology Network** and to the S3 AREA Desks born to drive young graduates towards innovation and related employment opportunities.

R2B RESEARCH TO BUSINESS

www.rdueb.it

R2B - Research to Business is the first international exhibition about Research and Higher Skills for Innovation in Italy aimed at fostering cooperation between advanced research and industry. Promoted by the Emilia-Romagna Region and Bologna Fiere, in collaboration with ART-ER, R2B has been the marketplace for innovation since 2015.





Supported by Regional policies and Big Data and Artificial Intelligence communities Emilia-Romagna is acknowledged as an **international Data Valley** boasting top world supercomputers, cuttingedge data centres, a large 'big data community', policies supporting new investments, and a dynamic business environment aimed to put Europe on a par with the American and Chinese giants.

TOP INFRASTRUCTURE



COMPUTING POWER







SYNERGIES AMONG TOP ACTORS





FOCUS

INDUSTRY 4.0 CLIMATE, WEATHER AND SUSTAINABILITY LIFE SCIENCE AND HEALTHCARE SMART CITIES, SMART MOBILITY

INTERNATIONAL ORGANIZATION



ARTIFICIAL INTELLIGENCE





AIRI

ACCELERATING PROGRAMS

ER STARTUPS INCUBATOR
PROGRAMME
MOTOR VALLEY ACCELERATOR
LAUNCHPAD ACCELERATOR

ECOLOGICAL TRANSITION

THE TECHNOLOGY TRANSFER INNOVATION PROGRAMME (TTIP) OF



EDUCATION AND TRAINING

MASTER DEGREES
AI ACADEMY
PHD COURSES
RESEARCH FELLOWSHIPS BD&AI

MAIN ACTORS

CINECA

CINECA is a Consortium composed by 115 Italian universities and public institutions, led by a Board comprising both the Ministry of Education and the Ministry of University and Research. CINECA's supercomputers are among the most important in Europe and worldwide, always listed in the Top 500 most powerful supercomputers in the world. www.cineca.it

CMCC

The Euro-Mediterranean Centre on Climate Change's mission is to investigate and model the climate system and its interactions with society. The Centre promotes and carries out basic and applied scientific research and develops operational services in the various fields on which climate change has an impact, favouring collaboration between universities, research bodies, local authorities, and manufacturing sectors. www.cmcc.it

ENEA

The National agency for new technology, energy and the development of a sustainable economy is a public research body operating in the fields of energy, the environment and new technologies supporting competitiveness and sustainable development policies. ENEA has 9 research centres in Italy, one of the largest is in Bologna, and owns an important GRID infrastructure for Supercomputing and Information and Communication Technology services. www.enea.it

BI-REX COMPETENCE CENTER

The Bi-Rex - Big Data Innovation and Research Excellence is an Industry 4.0 competence centre coordinated by the University of Bologna with a group of 58 stakeholders including five local universities (Bologna, Ferrara, Modena-Reggio, Parma, La Cattolica), organizations part of the regional and national research system such as CINECA, CNR, ART-ER, IOR, INFN as well as companies among which IBM, Philip Morris, Siemens, Manz Ag and many other regional excellences. bi-rex.it

BIG DATA ASSOCIATION

The Associazione Big Data was set up to interconnect and jointly exploit the knowledge, research and innovation potentials of high-performance computing, big data analysis, deep and machine learning algorithms, high bandwidth networks. The Association is open to national and international stakeholders from the science, research and business communities. It aggregates public entities managing facilities, skills and knowledge related to big data, their applications and possible impact on the daily lives of people. associazionebigdata.it

• IFAB - INTERNATIONAL FOUNDATION ON BIG DATA AND ARTIFICIAL INTELLIGENCE FOR HUMAN DEVELOPMENT
The Foundation aims to be an independent and influential international point of reference for the scientific
and cultural debate on human development, sustainability, and new science, operating as a "bridge"
between technology, research and their concrete applications in the industrial and social spheres. Its
main challanges are the following: reinforcing, enhancing and promoting scientific research and its crossdisciplinary implications, with particular focus on BD and Al; designing scenarios related to economic and
social transformations in connection with climate change, health crisis and other great challenges of our
time; disseminating the role and potential of Al and BD in addressing global issues with an impact on
people's lives.

www.ifabfoundation.org

INFN-CNAF

CNAF is the main computing centre of INFN - National Institute of Nuclear Physics. It is responsible for the management and development of the main computational and data management services supporting INFN. Since 2003, CNAF has been hosting the Italian Tier-1 for High Energy Physics experiments at the Large Hadron Collider in Geneva, providing resources, support and the necessary services for data storage, distribution, and data analysis activities. www.cnaf.infn.it

IOR RIZZOLI ORTHOPAEDIC INSTITUTE

The 'Istituto Ortopedico Rizzoli' is a IRCCS (biomedical institution of relevant national interest), a research hospital on prevention and treatment of musculoskeletal disorders. It is an excellence of the healthcare sector at the national and international level. It carries out industrial translational research, in particular in the application of general diagnostics, pharmacology and nutraceutics, material and computer science. www.ior.it

ITALIAMETEO

Founded in 2021, the ItaliaMeteo agency unifies and coordinates Italian National Meteorological bodies. It is organised in four large areas: services such as meteorological forecasting and climatology assessments and sea conditions; data observation in real-time and its dissemination; research, development and management of meteorological monitoring networks.

www.agenziaitaliameteo.it

- ECMWF EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS DATA CENTRE

 The new ECMWF data centre has been in operation since September 2021 at the 'Tecnopolo Manifattura

 I Data Valley Hub' in Bologna and represents a key asset of the regional Data Valley. The ECMWF is an intergovernmental organisation supported by 34 states with headquarter in the UK, a data centre in

 Bologna and offices in Bonn. The Emilia-Romagna Region was the winner of a call for proposal to host the data centre, as it offers "high-level services and logistics infrastructures" and "important opportunities of technical and scientific synergies". The centre performs research in the field of machine-learning in numerical weather prediction, as well as the use of advanced high-performance computing, big data and Al methodologies to create a digital twin of the Earth with breakthrough realism. www.ecmwf.int
- ITALIAN RESEARCH CENTRE ON HPC, BIG DATA AND QUANTUM COMPUTING (ICSC)
 The Centre carries out, in the framework of the National Recovery and Resilience Plan, R&D activities activities, at national and international level, for innovation in the field of simulations, computing and high performance analysis of data.

 www.supercomputing-icsc.it

TECNOPOLO MANIFATTURA DATA VALLEY HUB TECNOPOLO MANIFATTURA DATA VALLEY HUB

By concentrating investments and skills, the region has become a 'European Data Valley' with top world supercomputers.

FINANCED BY

Italian Ministry of Foreign Affairs and International Cooperation, Italian Ministry for Universities and Research, EURO HPC, EMILIA-ROMAGNA REGION

SUPPORTED

ROP ERDF 2014-2020

EMILIA-ROMAGNA REGION, ART-ER

CINECA, INFN - CNAF

INSIDE THE HUB ART-ER, BI-REX, CINECA, CMCC, ECMWF, ENEA, IFAB, IOR, INFN-CNAF, ITALIAMETEO

PARTNERS

UNIBO, Municipality of Bologna, CNR, INAF, LEPIDA, UNIFE, UNIMORE, UNIPR, ICSC

The Tecnopolo Manifattura Data Valley Hub in Bologna is an international digital hub hosting supercomputers including the pre-exascale LEONARDO - jointly funded by EuroHPC and CINECA on behalf of Italian Minister of University and Research - ranked 4th in the Top500 list of the fastest supercomputers in the world (November 2022). The Technopole also hosts: the ECMWF data centre, the new INFN - National Institute of Nuclear Physics Tier-1 data centre, along with the Competence Center Industry 4.0 BI-REX, the bio-banks of the Rizzoli Institute of Bologna, CMCC - Euro-Mediterranean Center on Climate Change, ITALIAMETEO, ENEA - National Agency for New Technologies, Energy and Sustainable Economic Development, ART-ER Attractiveness Research Territory. The partners of the hub include the local universities (UNIBO - University of Bologna, UNIFE- University of Ferrara, UNIMORE - University of Modena and Reggio Emilia, UNIPR - University of Parma), the research system (CNR - National Research Council of Italy, INFN-CNAF -National Institute of Nuclear Physics, ICSC Italian Centre of Super Computing) and LEPIDA - the broadband network of the regional public administrations. tecnopolomanifattura.it



Hosted in the "Tecnopolo Manifattura I Data Valley Hub" in Bologna



4th
MOST POWERFUL
SUPERCOMPUTER
IN THE WORLD

Top500, November 2022

A SUSTAINABLE REGION

POLICIES

The Emilia-Romagna Region promotes sustainable development, involving economic and social actors.

The **Pact for Work and Climate** - signed in 2020 by 55 local stakeholders - aims to share a single strategy capable of tackling current difficulties by supporting the economy and society. It is a Pact whose primary aims are generating high-value jobs, reducing inequality and taking Emilia-Romagna through environmental transition, thereby helping to achieve the objectives of the 2030 Sustainable Development Agenda, in particular achieving carbon neutrality by 2050 and 100% renewable energy by 2035. The strategic document "Pathway to Carbon Neutrality before 2050" identifies - for each sector - the policies and activities related to the attainment of these objectives.

REGIONAL PACT FOR LABOUR AND CLIMATE 2020

CHALLENGES

Demographic crisis Climate emergency Digital transformation Reduce inequalities

STRATEGIC OBJECTIVES

Knowledge and know-how Ecologic transition Rights and duties Jobs, Businesses, Opportunities

CROSS-CUTTING PROCESSES

Digital transformation
Simplification
Legality
Participation

- The Regional Energy Plan sets the strategy and objectives of the Emilia-Romagna Region for climate and energy up to 2030 in terms of strengthening the green economy, energy saving and efficiency, development of renewable energy, interventions on transport, research, innovation, and training. A 8.5 billion euro plan from public and private investments has been approved for the period 2022-24.
- The **Waste Management Regional Plan** led to an increase up to 73% of separate collection in 2021 with the aim to achieve 80% in the period 2022-27.
- The **Green Public Procurement Plan (GPP)** led to 818.3 million euro in green purchases in 2021, applying Minimum Environmental Criteria in 44% of the calls for tender.
- The new regional S3 Smart Specialisation Strategy identifies and analyses the regional main sectors for the future innovative investments in Emilia-Romagna.
- Regional Law for the promotion of Investments in Emilia-Romagna (LR 14/2014) and national incentives are strongly related to sustainability.

KNOWLEDGE AND INNOVATION COMMUNITIES (KIC)

Emilia-Romagna Region is involved in the EIT Raw Materials KIC eitrawmaterials.eu on circular economy - with ART-ER, CNR, University of Bologna and University of Ferrara as core partners, and EIT Climate KIC on climate change www.climate-kic.org



GREEN ECONOMY IN EMILIA-ROMAGNA

Source: GreenER 2022 — Regional Green Economy Monitoring Center managed by ART-ER

Emilia-Romagna has a strong presence of companies oriented towards the sustainable business model in a wide range of sectors as well as the main regional clusters. **About 6,500 companies** have been identified as belonging to the **green economy** in 2022, with a turnover of over 90 billion euro and 300,000 employees, including firms in traditional environmental sectors such as waste or water - that can be defined as "core green" - and also those ones that, regardless of the productive sector, act in a greener way and can be defined as "green business".

Sustainable production and consumption are supported by the adoption of "process and product" certification tools, such as the wide use of organic certifications and environmental Management System certifications (e.g. ISO14001).

NO. OF COMPANIES

3,046 AGRI-FOOD

501 MECHANICAL ENGINEERING CLUSTER

449 WASTE RECYCLING

RENEWABLE ENERGY AND EFFICIENCY

369 MOBILITY

337 BUILDING

342 ENVIRONMENTAL MANAGEMENT AND HYGIENE

236 INTEGRATED WATER CYCLE

126 GREEN CHEMISTRY

90 RECLAMATION

96 TEXTILE

TOTAL about

MANUFACTURE OF PACKAGING

TRADE FAIRS

The system of international trade fairs held in Emilia-Romagna related to sustainibility, represents another important asset of the regional framework:

- ECOMONDO Material and Energy Recovery and Sustainable Development Rimini, www.ecomondo.com
- **KEY ENERGY** Sustainable Energy and Mobility Rimini, www.keyenergy.it
- H20 ACCADUEO Technologies for the treatment and distribution of drinking water and wastewater treatment Bologna, www.accadueo.com
- REMTECH Remediation Technologies (including CHEMTECH on chemical innovation)
 Ferrara, remtechexpo.com
- **SEALOGY** Blue Economy professionals Ferrara, www.sealogy.it
- HESE Hydrogen Energy Summit & Expo Bologna, www.hese.it
- HYDROGEN EXPO Technological sector for the development of the hydrogen supply chain, Piacenza, <u>hydrogen-expo.it</u>

Many other regional fairs have strong connections with the green economy (e.g. **OMC, SANA, CERSAIE, GEOFLUID**)

ECOLOGICAL TRANSITION

Ecosister - Ecosytem Emilia-Romagna ecosister.it



Ecosister is a regional Foundation managing a Technology Transfer and Innovation Programme worth **110 million euro**, supported by the NRRP (National Resilience and Recovery Plan), involving a PPP of 23 participants supporting ecological transition in Emilia-Romagna

The activities are organised in 6 Spokes:

- Materials for sustainability and ecological transition
- Green manufacturing for a sustainable economy
- 5 Circular and blue economy
- 2 Clean energy production, storage and saving
- 4 Smart mobility, housing, and energy solutions
- Ecological transition based on HPC & data technology

Each Spoke will also coordinate one of the 5 actions of TTIP - Technology Transfer and Innovation Programme: Incubation, Acceleration, Technology Transfer, Training and Public Engagement.

A COMPETITIVE AND INTERNATIONAL REGION

SOME TOP BRANDS IN EMILIA-ROMAGNA





Emilia-Romagna is one of the most competitive Italian regions, due to an economic system that is increasingly active in international markets and that features:

- high rate of entrepreneurship:
 1 business for every 11 inhabitants
- strong manufacturing sector: hiring 25.2% of the total regional employees, while the Italian average is 18.6% and the EU27 is 16.1% *Eurostat*, 2021
- willingness to innovate: 44.2K employees (full-time equivalent) and 3.2 billion of gross expenditure in R&D in 2020 Eurostat

ECONOMY

Emilia-Romagna / Italy - Regional % of the national value

Data process by ART-ER

POPULATION	7.5%
No. OF COMPANIES	7.8% HIGH RATE OF ENTREPRENEURSHIP
No. OF MANUFACTURING FIRMS	9% STRONG MANUFACTURING SECTOR
GDP	9% HIGH GDP PER CAPITA (+13% vs EU27 average)
R&D EXPENDITURE	12.9% INNOVATIVE ECOSYSTEM, 1st in Italy for gross expenditure in R&D per resident
EXPORT	13.5% 1ST ITALIAN REGION FOR EXPORT PER CAPITA 2022

INTERNATIONALISATION

Internationalisation, trade, external relations: the Emilia-Romagna's economy is proud of its long tradition of being open to the world. In fact, it is not just the birthplace of well-known brands exported worldwide but it attracts foreign multinational companies to the area.

Over 1,600 regional companies control firms abroad in over 130 countries, from Germany and the US to Albania and Zambia.

Foreign trade

Trade with foreign markets is a key aspect of the internationalisation strategy supported by production agreements and investments abroad. With its 23,016 exporting companies, Emilia-Romagna is the leading Italian region for export value per capita and the second one for total exports.

Source: Unioncamere 2018-22

EMILIA-ROMAGNA
HIGHLY EXPORT-ORIENTED
PRODUCTION SYSTEM

Source: 2022, Istat-Coeweb - Data process by ART-ER

53.2 billion euro

import

84.1

billion euro
export

1ST ITALIAN REGION

EXPORT PER CAPITA

2ND ITALIAN REGION

FOR TOTAL EXPORT VALUE

IN EMILIA-ROMAGNA **7.8%** OF THE NATIONAL COMPANIES EXPORT **13.5%** OF THE DOMESTIC TOTAL

Trend of the exports

The Emilia-Romagna's economic system shows great resilience in times of crisis, as shown by the growth after the global crisis in 2009 (+82% of exports in the period 2009-19) and further proved by 2021 data showing an increase of flows with respect to pre-Covid figures.

VARIATION 2009-2019

Source: Istat-Coeweb - Data elaborated by ART-ER

+71% import

+82% export

VARIATION 2019-2022

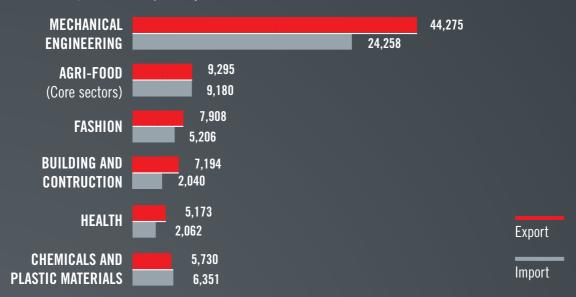
Source: Istat-Coeweb - Data elaborated by ART-ER

+44.5% import



FOREIGN TRADE EMILIA-ROMAGNA-WORLD BY KEY SECTOR. 2022

Values in million euro, Istat - Coeweb 2022 processed by ART-ER



The regional companies have a global presence, with **Europe, North America, and Asia** as main destinations. All the regional **key sectors** contribute to the overall international trade, with mechanical engineering as best performer, being a cross-cutting cluster that develops processes and product innovations that are essential for other value chains.

EXPORT, PERCENTAGE FOR SOME REGIONAL SPECIALISATIONS ON THE NATIONAL VALUE (2022)

- Tiles and ceramics: 93%
- Manufacture of tobacco products: 98%
- Meat and meat-based products: about 39%
- About ¼ of Italian exports of 'agricultural machinery' (26%), 'other general purpose machinery' (28%), 'tubes, pipes, hollow profiles and related fittings' (24%), 'motor vehicles' (28%)
- About 1/5 of national exports in 'wearing apparel, except fur apparel' (20%), 'other special purpose machinery' (23%), 'knitted and crocheted apparel' (20%) and manufacture of dairy products (21%) come from Emilia-Romagna

GOVERNANCE

EMILIA-ROMAGNA GO GLOBAL 2021-25 INTERNATIONALISATION AND ATTRACTIVENESS PROGRAMME

The programme is aimed at expanding the regional relations at the international level, targeting North America, India, Japan, Korea, and ASEAN countries in the fields of innovation and education, as well as a range of industries: health, digital, green, and creative.

EMILIA-ROMAGNA HUB IN SILICON VALLEY

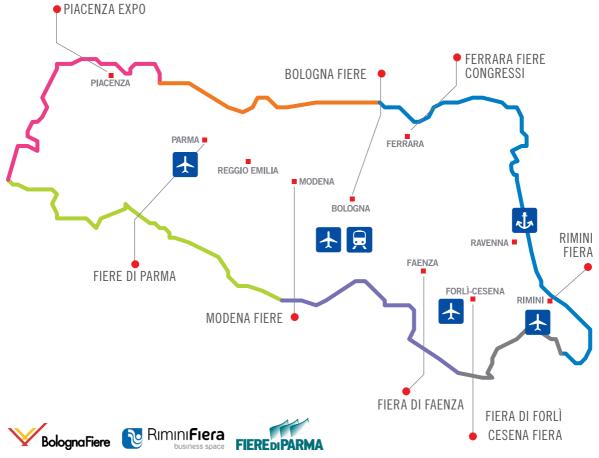
In 2015, the Emilia-Romagna Region opened an Innovation Hub in Silicon Valley managed by ART-ER. The initial aim of the hub was to support start-ups and innovative companies to approach the Silicon Valley ecosystem and to enter the North American market. Since 2018, ART-ER has been expanding the action of the hub setting up and consolidating relations with the main innovation centres and ecosystems in North America. The purpose is to develop contacts in strategic specialisations and find top-level expertise and potential partners to develop targeted collaboration projects.

www.emiliaromagnainsiliconvalley.it

REGIONAL TRADE FAIR SYSTEM

The Emilia-Romagna Trade Fair System is a highly attractive global hub for those who want to do business and expand their network. It is one of the most modern and advanced business platforms in Europe, hosting over 30 international trade shows including events of global importance for the impressive number of visitors (about 2 million every year) and the square meters of available exhibition space. The trade fairs' agenda spans from the automotive to the building sector, from the biomedical to the food industry, from mechanical engineering to leisure time and tourism. Trade fairs are also organised abroad (e.g. in China, United States, Japan). Of the 9 exhibition centres, the three main ones are Bologna, Rimini and Parma.







FOREIGN COMPANIES THAT HAVE ALREADY INVESTED IN EMILIA-ROMAGNA:

Altana, Amada, Amazon, AVL, B.Braun, Baxter, Basf, Berluti/LVMH, Borgwarner, Celanese, Crown, Dana, Doppel, Dover, Fev, Fresenius, Gea, Gowan, Guillin, Havi, Ibm, Ideanomics, Kastamonu, Keestrack, Manitou, Manz, Marini-Fayat, Medtronic, Mohawk, Newcleo, Newcleo, NTT Data, Philip Morris, Romaco, Schneider Electric, Segula, Siemens, Stellantis, TetraPak, TGK, Torrecid, Toyota, Volkswagen, Weichai, and many more.

About **1,400 foreign companies have invested in Emilia-Romagna**, which is recognized by the Foreign Direct Investment division of the Financial Times as a **Top European Region**.

TOP 9th

LARGE EUROPEAN REGION FOR FDI STRATEGY

Source: FDI division of Financial Times Report "European cities and regions of the future <u>2023"</u>

ATTRACTION AND RETENTION OF TALENTS

It-ER - The International Talents Emilia-Romagna programme is aimed at promoting study, research, and career opportunities in Emilia-Romagna among international talents and expats. It provides information regarding services and initiatives to support talents to move and live in Emilia-Romagna as well as information regarding regional networks and communities, making easier to be part of the regional ecosystem. internationaltalents.art-er.it

The Regional Law 2/2023 on "Attraction, retention and enhancement of highly specialised talents in Emilia-Romagna" - approved in February 2023 - offers a coordinated framework of policies, programmes and services to increase the talent attraction capacity of Emilia-Romagna and its R&I ecosystem, also through international collaboration and partnerships.





GOVERNANCE REGIONAL LAW FOR THE PROMOTION OF INVESTMENTS (R.L. 14/2014)

The region is governed by a business-friendly public administration that supports new investments, offering financial incentives and reliable governance, together with easy and fast procedures and a specific law for the promotion of investments. The law supports innovation and specialisation and encourages R&D projects by entering into agreements directly with investors, allowing to receive support for many different types of action (R&D, R&D facilities, environment protection, training, etc.) with just a single procedure. In addition, it guarantees regional coordination on procedures and collaboration with local bodies and stakeholders.

Since the law went into effect in 2016, it has financed 85 investment programmes creating more than 3,200 jobs.



















































Regional Law for the Promotion of Investments in Emilia-Romagna (no. 14/2014)

Results of the calls for proposals to enter in "AGREEMENTS FOR THE **SETTLEMENT AND DEVELOPMENT OF ENTERPRISES**"

Update January 2023

85

INVESTMENT **PROGRAMMES**

ABOUT **372** MILLION EURO

OF FINANCED INVESTMENTS (PART OF STRATEGIC INVESTMENT PROGRAMMES FOR BILLIONS OF EURO)

136 MILLION EURO **OF GRANTS**

OVER 3,238 NEW JOBS

Foreign investments in Emilia-Romagna are growing and expanding. Some examples:

PHILIP MORRIS - New Centre for Industrial Excellence opened in 2021; announced in 2022 a three-year investment plan of 600 MILLION in new production lines with an employment impact of 8,000 direct and indirect jobs involving about 7,500 suppliers

TOYOTA -180 additional hires in 2021-2022

MEDTRONIC - From 400 to 560 employees in 2017-2021

KEESTRACK-GOLDONI - Expansion started in 2022

A wider set of incentives is available from **EU funds** and the NRRP - National Recovery and Resilience, while the new Smart Specialisation Strategy (S3) identifies the most strategic sectors to be developed.

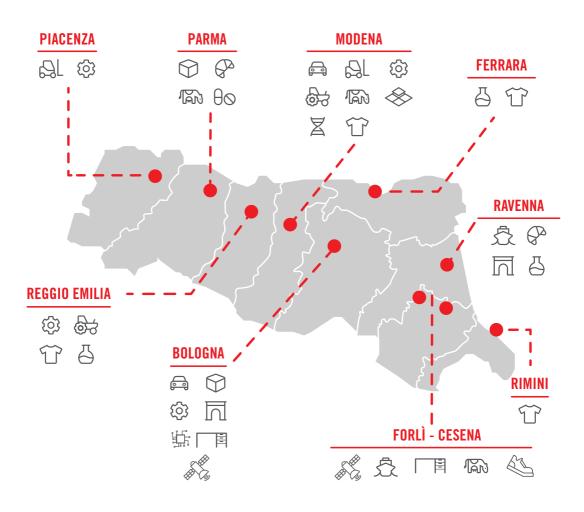
Many other opportunities derive from **national instruments** such as Development Contracts and Innovation Agreements. Investments supported by the national agreements with regional co-financing are creating over 2,500 new jobs, for a total amount of about 1.8 billion euro in Emilia-Romagna (2017-21 period).

In its effort to cut red tape, the Region also offers a onestop shop network assisting businesses by providing a single on-line procedure, managed by a centralised desk, to obtain authorisations and licences in the areas of health, safety, environmental protection, pollution and urban planning.



From Piacenza to Rimini, from food processing to automotive design and manufacturing, there are **plenty of world-class examples of specialisations** in the region: packaging machinery in Bologna and Parma; agricultural machinery, automotive design and manufacturing, oil hydraulics and electro-medical equipment from Modena to Bologna; ceramics in Sassuolo and Imola; food storage and cold chain systems in Romagna; ship building in Ravenna and the other maritime provinces. The region is strongly investing in big data, electric vehicles, space economy, with a strong commitment towards ecological transition.

SOME RELEVANT TERRITORIAL SPECIALISATIONS





ADVANCED MECHANICAL ENGINEERING

Companies in the mechanical industry in Emilia-Romagna represent a cluster with high level of technological innovation strongly oriented towards Industry 4.0, thanks to its cutting-edge skills and industrial research, and supported by both the regional R&D network and universities and training institutes.

Mechanical engineering is the regional main cluster — spread throughout the region - and it supports all the other regional key sectors, especially Agri-food (e.g. agricultural machinery, food packaging); Housing (e.g. machinery for building construction and ceramics), Health Care (e.g. electro-medical equipment, packaging).

RESULTS OF THE REGIONAL SMART SPECIALISATION STRATEGY FOR RESEARCH AND INNOVATION

Updated December 2021

2,162
funded
R&D PROJECTS

1,128
million euro of
TOTAL
INVESTMENT

436
million euro of PUBLIC FUNDS

999 new RESEARCHERS









Specialisations: regional export vs the national total Istat Coeweb, 2022

OTHER GENERAL PURPOSE MACHINERY

28%

TUBES, PIPES, HOLLOW PROFILES AND RELATED FITTINGS

24%

AGRICULTURAL MACHINERY

26%

MOTOR VEHICLES

28%

OTHER SPECIAL PURPOSE MACHINERY

22%



KNOWLEDGE AND INNOVATION COMMUNITIES (KIC)

Emilia-Romagna is directly involved in the EIT Manufacturing KIC (www.eitmanufacturing.eu) focused on Industry 4.0 and digital transformation - with ART-ER, University of Modena and Reggio Emilia, and University of Parma as core partners.

THE MAIN SPECIALISATIONS AND OUTSTANDING NICHES OF THE MECHANICAL CLUSTER ARE:

- Sports cars and motorbikes, with world-famous brands (e.g. Ferrari, Lamborghini, Ducati, Maserati, Dallara, Pagani) and high-level suppliers (e.g. AVL, HPE Coxa, Magneti Marelli, FEV)
- Packaging machinery/solutions (e.g. IMA, GD/Coesia, Sacmi, Marchesini, Eviosys, Ocme, Tetra Pak)
- Industrial automation (e.g. Bonfiglioli, Rossi, Elettric80, Sir)
- Hydraulics, turbines, and pumps (e.g. Interpump)
- Machinery, equipment and components for the food industry, ceramics, constructions, wood, energy production, electro-medical as well as measuring devices, checking and surveying instruments (e.g. Cefla, Kohler, ArgoTractors, Termal Group, Beghelli, Marposs, Metalcastello, Smeg, SCM group, GVS, Bellco)
- Aerospace has strong connections with the whole mechanical engineering and specialised top businesses (e.g. Curti, Poggipolini, Matecam, Beamit)
- Other areas such as boating (e.g. Ferretti) and wellness (e.g. Technogym)

In Emilia-Romagna, there are more than 11,000 new graduates in STEM degree courses every year (Miur 2021). Degree courses in engineering are available in the 6 regional universities (excluded Johns Hopkins in Bologna). Higher Technical Institutes, as ITS Maker, also provide specialised courses responding to the specific needs of the local companies.

INTERNATIONAL TRADE FAIRS IN EMILIA-ROMAGNA

AUTOPROMOTEC

Automotive Equipment and Aftermarket Products Bologna, www.autopromotec.com

E-TECH EUROPE

The automotive electrification industry Bologna, e-tech.show

MECSPE

Technologies for innovation Bologna, www.mecspe.com

MECFOR

Engineering, manufacturing & subcontracting Parma, www.mecforparma.it

MFTFF

Metals, Extrusion, Foundry Bologna, www.metef.com

SPS-IPC-DRIVES

Smart Production Solutions Parma, www.spsitalia.it

SALONE DEL CAMPER

Caravanning and tourism en plein air Parma, www.salonedelcamper.it

BOLOGNA INTERNATIONAL BOAT SHOW

www.salonenauticobologna.it

FUTURMOTIVE

Energy and ecology transition and new business models for the automotive industry Bologna, www.futurmotive.com

See more exhibitions related to specialised mechanical machinery in the following key sectors.

ADVANCED MECHANICAL ENGINEERING IN EMILIA-ROMAGNA

350.2 thousand employees



69.4 thousand local units

Infocamere processing by ART-ER 2021 44.3

billion euro
export



24.3 billion euro import

Istat Coeweb 2022

FOCUS: MOTOR INDUSTRY

For decades, the automotive industry has represented one of the most important industrial sectors of the Emilia-Romagna production system. Brands like Ferrari, Maserati, Lamborghini, Ducati, Pagani and Dallara are just the top of a production chain that includes a high number of specialised suppliers, working together in the search for absolute perfection.





























ELECTRIC VEHICLES

Emilia-Romagna worldwide renown automotive cluster is investing in electric vehicles, with many relevant Foreign Direct Investments in the last few years (AVL, FEV, BorgWarner, Lamborghini, Ducati, Energica Motor Company) supported by the Regional Government.

Source: Infocamere — processing by ART-ER 2021

Source: Infocamere — processing by ART-ER 2021

BILLION EURO URNOVER

Source: AIDA 2021

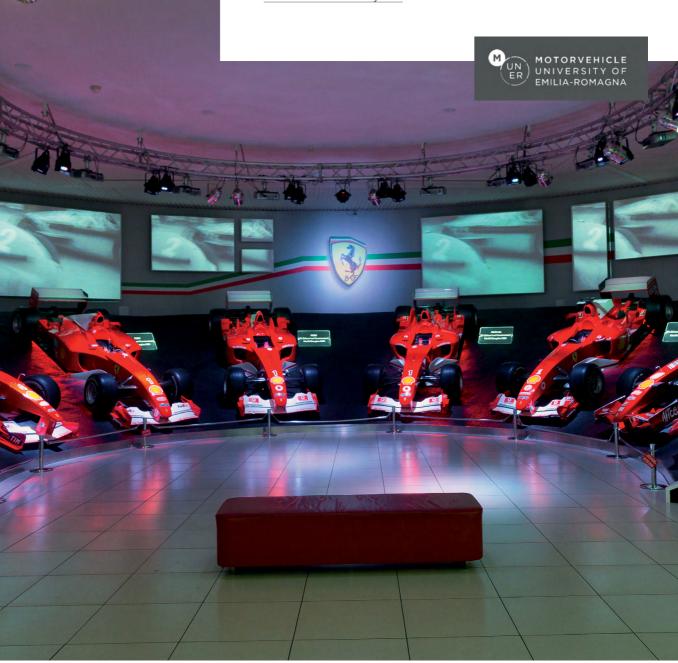
BILLION EURO EXPORT

Source: Istat Coeweb 2022

MUNER

Emilia-Romagna attracts the most motivated and prepared young students from abroad thanks to international master's degrees at the **Motor Vehicle University of Emilia-Romagna** (MUNER). MUNER groups together four local universities - University of Bologna, University of Ferrara, University of Modena and Reggio Emilia, University of Parma - and the motor companies that represent the best of Made in Italy in the world: **Automobili Lamborghini**, **Dallara**, **Ducati**, **Ferrari**, **Haas**, **HPE COXA**, **Magneti Marelli**, **Maserati**, **Pagani**, **AVL**, **Scuderia Alpha Tauri**, **Bosch**, **CNH**, **ST**, **Pirelli**.

motorvehicleuniversity.com



FOCUS: PACKAGING

The regional packaging division is global leader in the manufacturing and repairing of specialised machinery for packaging and it is highly connected with the agri-food, health, and fashion sector, among others.

IMA, GD/Coesia, Sacmi, Marchesini, Eviosys, Ocme and Tetra Pak are just some of the top local companies.



LOCAL UNITS

OF THE NATIONAL TOTAL **EMPLOYEES**

45.1% OF THE NATIONAL TOTAL BILLION EURO TURNOVER

FOCUS: AEROSPACE



Aerospace is one of the main priorities in the development strategy of the Emilia-Romagna Region. The sector has strong synergies with the mechanical engineering and automotive clusters, which rank among the region's main productions, with competitive companies in aerospace-related fields: helicopters, aircrafts, drones, composite and advanced materials, fastening elements, cubesats, nano-satellites and additive manufacturing. Big Data and Supercomputing also play a key role in many applications related to aerospace, including weather forecast, earth observation, simulation/development, VR/AR. Regional clusters related to aerospace work on applications that include health & well-being and agri-food, with applications ranging from commercial space flights to precision farming. infoaerospace@art-er.it

SPACE ECONOMY IN EMILIA-ROMAGNA

SOME OF THE TOP COMPANIES

Helicopter/Aircrafts

Curti, Elytron Aeronautica, Famà Helicopters

Advanced and Composite Materials

Dallara Compositi, Bercella, Bucci Composites, Mae, Novac

Fastening element and structural components and system Poggipolini

Components in titanium, steel, aluminium Matecam

Cubesats Sitael, Cshark, NPC SpaceMind

Engines Dieseljet, Aernova Aerospace, Lucchi R.

Printed circuits boards

Cistelaier, Redox

Additive Manufacturing

Beamit, CRP Technology

ADAS and autonomous driving

Hipert

Drones Difly, Italdron, Zephyr, Curti

Solutions in space applications

Adaptronics, HighFTech, NPC SpaceMind, Nautilus, Novac and many more

Earth Observation

MEEO, StudioMapp, Gecosistema

Health, well-being and food for aerospace

Technogym, Barilla, Gruppo Villa Maria, gAstronomica

PROJECTS/INITIATIVES WITH REGIONAL INVOLVEMENT

Initiative supporting space economy collaboration in Houston

Mirror GOV SAT COM (Innovative satellite system)

Mirror Copernicus (Innovative infrastructures)

I-CIOS (Commercial In Orbit Servicing)

Agreement between regional government and national air force

Regional membership in European network NEREUS

ECOSYSTEM/COLLABORATIVE R&D

CICLoPE - University of Bologna

Centre for International Cooperation in Long Pipe Experiments

Regional Clust-ER Network

FLY.ER value chain "Avionics and aerospace" in Clust-ER Mech, Clust-ER Innovate, Clust-ER Health, Clust-ER Agrifood

IR4I

Innovation and Research in Aerospace/Aeronautics

ANSER

Aeronautics and Space in Emilia-Romagna

CINFCA

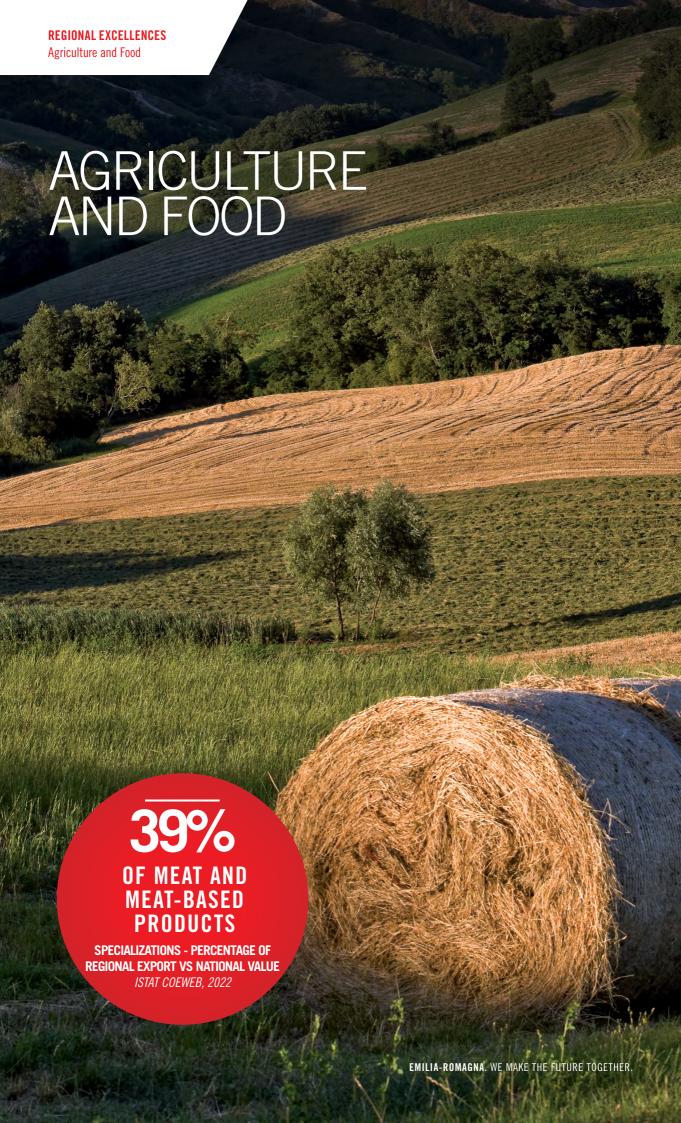
The largest Italian computing centre

Forum for the promotion of the regional aerospace cluster

Collaboration among universities, technopoles, research centres

Forlì aeronautical technology pole

Large number of facilities and laboratories dedicated to flight-related training, research, and experimentation



The Emilia-Romagna agri-food system encompasses a unique heritage made of tradition and excellent quality, characterized by an approach strongly oriented towards research and innovation, environmental sustainability, and food safety.

FOOD QUALITY AND CULINARY TREASURES

The quality of food products is an essential aim of regional policies.

- The 44 regional food products certified PDO and PGI (excluding wines) represent the most important production value of Italian registrations (about 40% of the national value) with 6,190 local companies involved
- In addition, there are 30 regional PDO and PGI wine products
- The main PDOs and PGIs products in terms of value are produced here: Parmigiano Reggiano PDO, Prosciutto di Parma PDO, Aceto Balsamico di Modena PGI, Mortadella Bologna PGI and Grana Padano PGI
- 400 out of 5,000 national denominations of traditional agri-food products come from Emilia-Romagna
- Enoteca Regionale Emilia-Romagna a local association for the promotion of wine (also PDO/PGI) in Italy and abroad
- Food excellence is also nurtured through specific educational institutions, including: ALMA, a top International School of Italian Cuisine in Colorno (Parma) training chefs, sommeliers, managers, etc.; Chef to Chef, an association of 50 chefs promoting evolution and reputation of the regional cuisine; Casa Artusi, the very first gastronomic culture centre established, devoted entirely to Italian home cookery; the large number of hotels and catering high schools across the region (31)
- Fico is the world's largest food park, covering an area of 100,000 sqm in Bologna
- Emilia-Romagna is the first region in Italy for the number of 'Bib Gourmand' restaurants in the Michelin Guide 2022.

193.1* thousand EMPLOYEES

Infocamere processing by ART-ER, 2021

85.7* thousand LOCAL UNITS

Infocamere processing by ART-ER, 2021

9.3*
billion euro of EXPORT

Istat Coeweb processing by ART-ER, 2022

9.2*
billion euro of IMPORT

Istat Coeweb processing by ART-ER, 2022

5.3
billion euro of
AGRICULTURAL
production value
2021

* Not including tobacco, agricultural machinery and agrochemical products



SUSTAINABLE AGRICULTURE AND VALUE CHAIN APPROACH

ORGANIC FARMING



186,140

HECTARES

17.2% OF THE REGION'S UTILISED AGRICULTURAL AREA (UAA)



6,925 ORGANIC COMPANIES

IN 2021



1 S

AMONG THE NORTHERN ITALIAN REGIONS

FOR NUMBER OF ORGANIC COMPANIES

INTEGRATED FARMING (IP - INTEGRATED PRODUCTION)



AN OFFICIAL LABEL "QC — QUALITÀ CONTROLLATA"

RECOGNISES THE MINIMIZED USE OF SYNTHETIC CHEMICALS AND THE LOW CONSUMPTION OF RESOURCES



IP SECTOR

3,168 FARMS AND A TOTAL OF 87,000 HECTARES



QC SECTOR

116 SINGLE AND ASSOCIATED
AGRICULTURAL FARMS, MAINLY FRUIT
AND VEGETABLES (83, OF WHICH 14 FOR
THE INDUSTRIAL TOMATO)



AGREEMENTS FOR THE APPLICATION OF INTEGRATED PRODUCTION STANDARDS:

- 94% OF PROCESSED TOMATO IN NORTHERN ITALY (ABOUT 6% IS ORGANIC)
- 2/3 OF THE PRODUCTION OF LOCALLY GROWN POTATOES
- 1/3 OF THE LOCALLY GROWN DURUM WHEAT

PRODUCER ORGANIZATIONS (PO)

PRODUCER ORGANISATIONS (POS) HELP FARMERS TO REDUCE TRANSACTION COSTS AND COLLABORATE IN PROCESSING AND MARKETING THEIR PRODUCTS

WITH THE SUPPORT OF THE REGIONAL RURAL DEVELOPMENT PROGRAMME 2014-2020, IN EMILIA ROMAGNA THERE ARE:



17 PRODUCER ORGANIZATIONS IN 2021

WITH € 427 MILLION IN TURNOVER (2020)



LOCAL POS INCLUDE

19,254 FARMS (2021) PRODUCING

9 DIFFERENT VEGETABLE PRODUCTS € 231 MILLION OF TURNOVER (2020)



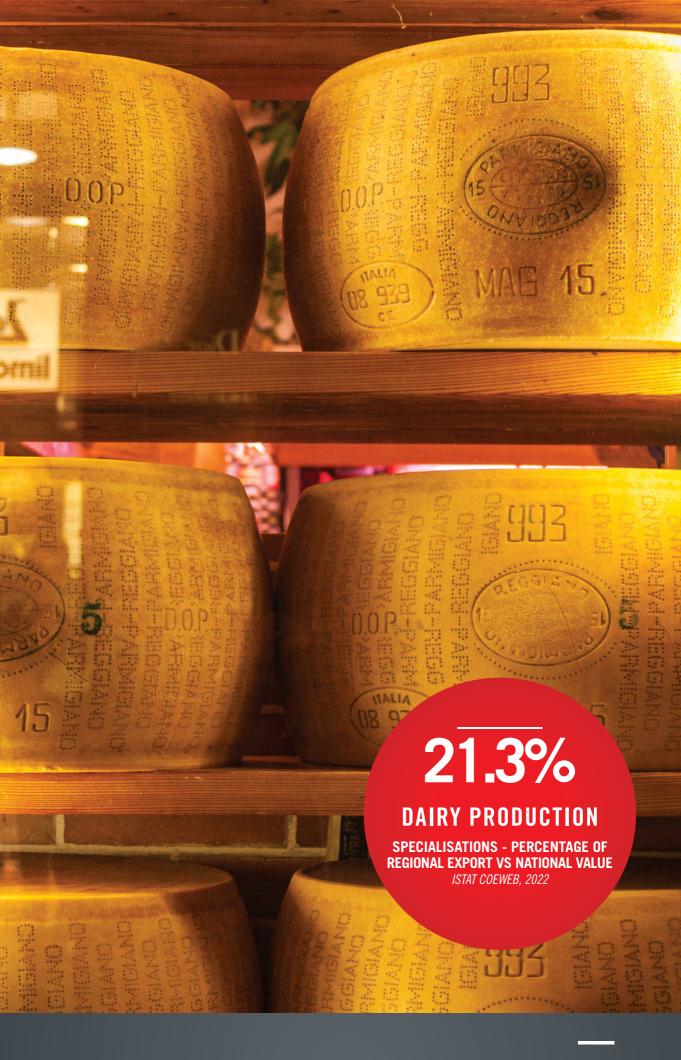
LOCAL POS INCLUDE

832 FARMS (2021) PRODUCING 8 DIFFERENT ANIMAL PRODUCTS € 196 MILLION OF TURNOVER (2020)



4 INTER-BRANCH ORGANIZATIONS

PROCESSED TOMATO, PORK, PEARS, EGGS, WORKING ALSO WITH OTHER REGIONS



FOOD SAFETY

- Food Safety is a core area of public health policies and is implemented through the surveillance of the origin of food, animal and vegetable products, from farm to fork
- EFSA European Food Safety Authority is located in Parma, in the centre of the local Food Valley
- The regional **Phytosanitary Service** works closely with the Plant Protection Service and local stakeholders in drafting of specific dossiers (Pest Risk Analysis or PRA) which are legally required to ensure safe access from/to international markets



Main activities of the regional Phytosanitary service	Result
Territorial surveillance activities	Control of two border inspection posts with over 3,000 phytosanitary inspections per year
Foreign activities monitoring	Over than 9,000 phytosanitary certificates for export
Phytosanitary measures for sustainable agriculture	288 bulletin - Phytosanitary Alert System

KNOWLEDGE AND INNOVATION COMMUNITIES (KIC)

Emilia-Romagna is involved in the EIT Food KIC www.eitfood.eu as member of the RIS Policy Council.

INTERNATIONAL TRADE FAIRS IN EMILIA-ROMAGNA

INTERNATIONAL Agricultural Machinery

Bologna, www.eima.it

International Food Fair Parma, www.cibus.it

Exhibition of Technologies for Food Industries

Parma, www.cibustec.it

Plants, technologies and services for the production, conditioning, marketing and transport of fruit and vegetables

Rimini, www.macfrut.com

Organic and natural products: food, health and environment Bologna, www.sana.it

Beekeeping, apiary products and equipment

Bologna, www.apimell.it

The Dolce World Expo Rimini, sigep.it

Good, clear and fair wine Bologna, slowinefair.slowfood.it

The eating out experience show, held at the same time with BBTech expo

Rimini, beerandfoodattraction.it

INNOVATION

An Agricultural Knowledge System has been developed to coordinate agri-food production and research through an inter-sectoral approach along the whole value chain.

RESULTS OF THE REGIONAL SMART SPECIALISATION

STRATEGY *Updated: December 2021*

5,296
funded
R&D PROJECTS

428 NEW RESEARCHERS

1,250
million euro
OF TOTAL
INVESTMENT

629
million euro
OF PUBLIC
FUNDS

REGIONAL RURAL DEVELOPMENT PROGRAM 2014-2022

1.6
billion euro of FUNDS

in the period 2014-2022

91.9
million euro to the
KNOWLEDGE SYSTEM
of which 50 million to finance the

Operational Groups — OG

265
PROJECTS OF INNOVATION

in the food chain

HOUSING AND CONSTRUCTION INDUSTRY

RESULTS OF THE SMART SPECIALISATION STRATEGY

Updated: December 2021

634

funded R&D PROJECTS

236

million euro of total INVESTMENT

138

million euro of public FUNDS

200

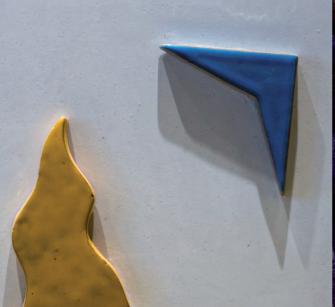
NEW RESEARCHERS

Local companies in the construction industry have become international leaders in terms of product quality and design innovation and their cutting edge research for materials and production technologies.

Exports of tiles and ceramics are worth 93% of the national value. The Italian ceramics industry is concentrated between the provinces of Modena and Reggio Emilia with the Sassuolo district (with its 135 companies, almost 20 thousand employees and a turnover of 5.3 billion euro), Faenza (Ravenna) and Imola (Bologna).

The region is also home to Italian companies producing machines and systems for the ceramics industry and related production areas, including earth-moving machinery, cranes and hoisting equipment, and in the production of building material and shutters.

Production of high-quality furniture and furnishings is another excellence with larger concentration in Forlì (upholstered furniture district), Rimini and Imola.





INTERNATIONAL TRADE FAIRS IN EMILIA-ROMAGNA

CERSAIE

Salon of ceramics for architecture and bathroom sanitary ware Bologna, www.cersaie.it

SAIE

Exhibition of new building industrialization and land use Bologna, www.saiebologna.it

TECNA

International marketplace in the heart of the most creative, innovative, and technological district for surfaces

Rimini, www.tecnaexpo.com

GEOFLUID

Exhibition & Conference of Technology and Equipment for Prospecting, Extracting and Conveying Underground Fluids Piacenza, www.geofluid.it

PIPELINE & GAS EXPO

The utility construction show Piacenza

www.pipeline-gasexpo.it

SUN

B2B show dedicated to equipment and services for the outdoor sector. Simultaneously with TTG Travel Experience, SIA Hospitality Design, Superfaces Rimini

www.sunexpo.it

ttgexpo.it siaexpo.it

www.superfaces.it



361.5 thousand employees

Infocamere processing by ART-ER, 2021 151.3 thousand

Infocamere processing by ART-ER, 2021 7.2
billion euro
export

Istat Coeweb processing by ART-ER 2022

2.0
billion euro import

Istat Coeweb processing by ART-ER 2022

HEALTH AND WELLNESS INDUSTRY

The health industry is an increasingly important field of activity. The **biomedical district** in Mirandola (Modena) is a great example of this highly competitive sector, with around 5,000 employees. The district includes important foreign groups such as Medtronic, B.Braun, Fresenius, Baxter, Evotec-Rigenerand. The production of orthopaedic prosthetic products in the Bologna area is another local excellence.

Emilia-Romagna ranks 1st region in Italy for the efficiency of the health system (Demoskopika, 2020), with a network of cutting-edge University Hospitals, including Istituto Ortopedico Rizzoli, the world's 8th best hospital specialised in orthopaedics; Policlinico Sant'Orsola-Malpighi, the 3rd best hospital in Italy (Newsweek, 2022); and many others. The pharmaceutical sector is also strong, with leading players such as Chiesi, Acme, Alfasigma, Doppel and Valpharma that have been operating in the region for decades. Exports from the health industry sectors showed a strong growth, in particular in the pharmaceutical cluster.

The spa resorts spread across our region are also worth noting. Those spas and the resulting tourism industry are part of the so-called **Wellness Valley** linking health to quality of life. Note also the presence of top global companies such as Technogym.

RESULTS OF THE REGIONAL SMART SPECIALISATION STRATEGY

Updated: December 2021

664
funded
R&D PROJECTS

300
million euro of total
INVESTMENT

186
million euro of public
FUNDS

406
new
RESEARCHERS

130.4 thousand employees

Infocamere processing by ART-ER, 2021

32.4 thousand local units

Infocamere processing by ART-ER, 2021 5.2
billion euro
export

Istat Coeweb processing by ART-ER 2022 2.1
billion euro

Istat Coeweb processing by ART-ER 2022



KNOWLEDGE AND INNOVATION COMMUNITIES (KIC)

Emilia-Romagna is involved in the EIT Health KIC eithealth.eu as an associated partner.

INTERNATIONAL TRADE FAIRS IN EMILIA-ROMAGNA

EXPOSANITÀ

Health and health care services Bologna, www.exposanita.it

COSMOPROF

Perfumery and cosmetics Bologna, www.cosmoprof.com

COSMOFARMA

Health, well-being and beauty products and services for pharmacies

Bologna, www.cosmofarma.com

RIMINI WELLNESS

World of sport (sports and beauty equipment, clothing, footwear, sports medicine and nutrition, etc.)
Rimini, www.riminiwellness.com

EXPODENTAL

Dental sector

Rimini, www.expodental.it

B.T. EXPO

Biomedical Technologies Exhibition Modena, www.bt-expo.it

CULTURAL AND CREATIVE INDUSTRIES

The cultural and creative industries in Emilia-Romagna play a key role in the development and quality of life of the local communities. The sectors involve cultural and artistic enterprises, the media and cultural industries, creative digital industries and communication services, multimedia and ICT creative services, management and cultural heritage services, production of games and musical instruments, entertainment and culture activities. In a more general sense, this also comprises the economics of creativity concerning high-tech innovative companies, the fashion industry, furniture industry, and all other products connected with design.

The region also boasts a **strong offer in terms of cultural festivals** ranging from classical to electronic music, from theatre pieces to motion pictures. Some regional excellences are well-known internationally: the **Cineteca - Centre for audio-visual development and technological innovation** is known for its top film restoration skills. The **Fellini Museum** in Rimini is the largest ever named after a film director.

The Emilia-Romagna Turismo website emiliaromagnaturismo.it provides a calendar of the main events.

Culture and Creativity Observatory <u>www.emiliaromagnaosservatorioculturaecreativita.it</u> is an integrated tool designed to monitor the CCIs sector of the Emilia-Romagna region.



NEB - NEW EUROPEAN BAUHAUS

The New European Bauhaus initiative connects the European Green Deal to daily lives and living space, creating a bridge between the world of science and technology, art and culture. Emilia-Romagna is involved in the initiative with many partners, such as ART-ER, University of Bologna, Clust-ER Associations and Technopoles, REI Foundation and others.

KEY FIGURES

by ART-ER, 2021

106.8 thousand employees





Bologna will host one of the 6 Co-Location Centres (CLCs) through an international project worth 150 million euro supported by **KIC EIT Culture & Creativity.**



INTERNATIONAL TRADE FAIRS IN EMILIA-ROMAGNA

ARTEFIERA

International Contemporary Art Bologna, <u>www.artefiera.it</u>

BOLOGNA CHILDREN'S BOOK FAIR

Children's publishing industry Bologna www.bookfair.bolognafiere.it

NERD SHOW

Comics and pop culture Festival Bologna, <u>www.nerdshow.it</u>

MIR TECH

Live Entertainment Expo Rimini, <u>www.mirtechexpo.com</u>

RESTAURO

International restoration trade show Ferrara www.salonedelrestauro.com

PLAY

The games Festival Modena www.play-modena.it

WMF

We Make Future Rimini, www.wemakefuture.it

RIMINI AMUSEMENT SHOW

Rimini, www.riminiamusement.it

FAMAART

The Frame Place Bologna, www.famaart.it

CULTURE AND CREATIVITY

1,602

funded R&D projects

132
million euro of public funds

RESULTS OF THE REGIONAL SMART SPECIALISATION STRATEGY

Updated: December 2021

274

million euro of total investment

494

new researchers

SERVICES INNOVATION

1 42

funded R&D projects

210 million euro of public funds RESULTS OF THE REGIONAL SMART SPECIALISATION STRATEGY

Updated: December 2021

252

million euro of total investment

125

new researchers

A WELL-KNOWN INTERNATIONAL TRADE EVENT IS

MODA Makers

ON ITALIAN KNITWEAR

Carpi, modamakers.it

FASHION

Divided into textiles-clothing, footwear, and accessories, the **fashion production chain** is made by a large number of small companies either working for third parties or on niche productions, with technical and manual skills of the finest quality. Additionally, very well-known brands such as Max Mara, Liu Jo, Pinko, Twin-Set, Furla, Piquadro, also have their production plants and design centres in Emilia-Romagna.

The **Carpi district** - in the province of Modena - is the symbol of this sector. Specialised in knitwear and clothing in general, it is one of the industry's leading centres at the national level with 596 companies, 5,425 employees and a turnover of 1.3 billion euro *Source: Carpi District Observatory 2021.*

A state-of-the-art **footwear industry** is concentrated in Romagna, in particular in the district of San Mauro Pascoli, and the Forlì-Cesena province, as well as other parts of the region, with well-known brands such as Giuseppe Zanotti, Berluti, Sergio Rossi, Baldinini, Casadei. The French company Berluti — part of LVMH group - built a factory in Ferrara and signed agreements with local institutions for specialised training projects.

Trade and access to markets are also leading factors for the wealth of the sector. For example, YNAP - global leader in the luxury **fashion e-commerce** - started as Yoox from Emilia-Romagna region. The Bologna-based **Centergross** is one of the main fashion trade hubs in the area, spread over 500,000 sqm, and it employs 6,000 people. It consists of over 700 companies (25% in the womenswear sector) with 60% of the district's trade going abroad.





73.1 thousand employees

Infocamere processing by ART-ER, 2021

> 31.5 thousand

> > Infocamere processing by ART-ER, 2021

7.9
billion euro export

Istat Coeweb processing by ART-ER, 2022 5.2
billion euro
import

Istat Coeweb processing by ART-ER, 2022

CONTACT POINT

Invest in Emilia-Romagna is the contact point for foreign investors. It's operated by the consortium **ART-ER**, Attractiveness Research Territory, providing a wide range of services free of charge:



Support for incentives

Support for completing the 'Agreement for the Settlement and Development of Companies' Regional Law for Investment Promotion no. 14/2014
Support for regional and national incentives



Image building

Tools and context analyses for investment promotion Pre-investment information and support for the business set-up process



Networking

Local and international business networking Collaboration with actors and institutions at national, regional and local level



Support in location scouting



Aftercare

INVEST IN EMILIA-ROMAGNA

Invest in Emilia-Romagna

Website: www.investinemiliaromagna.eu

realestate.investinemiliaromagna.eu

Mail: investinemiliaromagna@art-er.it

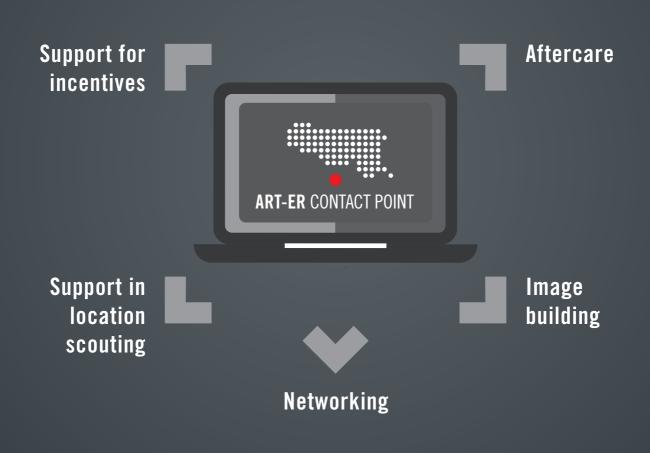
Social media:

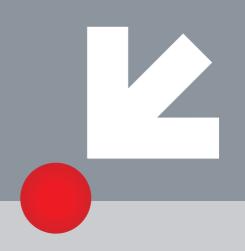
in www.linkedin.com/company/investinemiliaromagna #investinEmiliaRomagna





INVEST IN EMILIA-ROMAGNA ACTIVITIES FOR INVESTMENT PROMOTION





Regione Emilia-Romagna

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