IMPROVE
Interreg Europe

European Union
European Regional Development Fund

# PGI05786 – IMPROVE

# Improving Structural Funds for better delivery of R&D&i policies

# Regional State of the Art Report

## Centre-Val de Loire, France

05 June 2020

dev'up Centre-Val de Loire

Innovation et développement des entreprises

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# 1. Introduction

The State of the Art is the first activity to be performed by the IMPROVE project's partners within the Exchange of Experiences work package.

The objective of the State-of-the-Art report is to clarify the current situation in terms of management and implementation of Structural Funds, with a special focus on the policy instruments selected by each partner.

**In that respect, Dev'up-Centre Val de Loire, the regional development agency of the Centre-Val de Loire region (CVL) chose to work on the RIS3 of the Centre-Val de Loire region and consequently the axis1 of the OT1 of the ERDF OP as part as the IMPROVE Project.**

# 2. Regional profile

The aim of this section is to provide a short overview of the region in term of economy and RDI.

## Analysis of the specific Economic Transformation challenges facing regions in the coming decade.

Centre-Val de Loire is a large but sparsely populated French region, comprising **2.5 million inhabitants** (surface area 39 151km²). Unlike most other French regions, the 2016 territorial reform did not affect its perimeter. **The region thus maintained its identity but is now of a relatively smaller size compared to the other French regions**.

With 280 km inscribed on the UNESCO World Heritage List, the Centre-Loire Valley region's renown lies in the quality of its art of living and its land, the legacy of an epicurean tradition which is still today considered as an international reference. Its preserved environment, its varied landscapes and the wealth of its history also contribute to the region's appeal.

**The northern part of the region is juxtaposed to the Paris region (Ile-de-France), which makes the region attractive for some industries but also puts it at risk of competition, especially in the labour/skills market**. The region contains **two large agglomerations**, **Orléans** and **Tours** and is structured around three distinct socio-economic systems:

- North of the Region: strong demographic dynamism and economically integrated to the Greater Paris area;
- Loire valley: characterised by economic dynamism and population growth, especially around Orléans and Tours

- South of the Region: a range of smaller towns and cities characterised by population ageing and employment decline.

The share of **industrial employment, at approximately 20%** (both in terms of GDP and jobs) is above the national average of 18%. Industrial jobs are mainly in **metalworking industry (70 000 employees out of 140 000) and rubber, followed by the food industry**. **Many of the industrial companies are sub-contractors and part of larger supply chains, often remote from their Tier One clients**. These sub-contractors are not always easily aligned with the regional DPS (Domains of Potential Specialisation = priority sectors) and therefore the Region Council with the support of their development agency (Dev'Up Centre Val de Loire) have put in place horizontal support measures to meet these needs. **Pharmaceuticals and cosmetics are the only industrial sectors that can be considered as differentiation factors regarding other French territories in terms of both specialisation and employment**. The region also **has a well-known and dynamic tourism and heritage sector linked in particular to the Chateaux de la Loire**.

## Business demographics in 2018

In Centre-Val de Loire, the number of establishments in commercial activities outside agriculture increased from 112,000 to 130,000 between January 2008 and 2013, taking into account self-employed entrepreneurs.

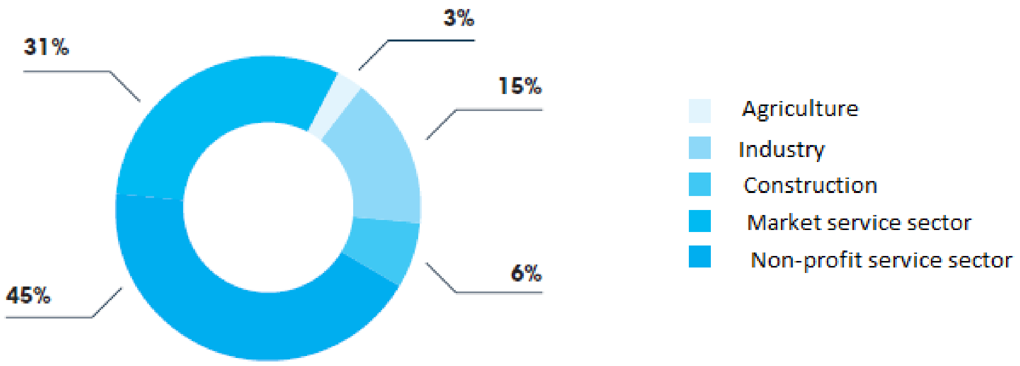
The average annual growth rate of 3.1% is slightly lower than that of France (3.5%). This rate places the region in 11th place among metropolitan regions.

The moderate growth in the number of establishments, around 3,600 per year, is however the result of a significant renewal of the productive fabric: nearly 37% of establishments are affected each year: 20% of establishments appear and 17% disappear.

### NUMBER OF COMPANIES BY SECTOR OF ACTIVITY AS OF DECEMBER 31, 2017

| | Number | % |
|---|---|---|
| **All sectors** | 132 864 | 100,0 |
| **Industry** | 10 350 | 7,8 |
| **Construction** | 19 100 | 14,4 |
| **Trade, transport, accommodation and catering** | 38 090 | 28,7 |
| **Business market services** | 33 899 | 25,5 |
| **Retail Merchant Services** | 31 425 | 23,7 |

**NUMBER OF JOBS BY SECTOR OF ACTIVITY AS OF DECEMBER 31, 2017**




New establishments are mainly creations, almost four times out of five (Figure 2). Geographical transfers, i.e. the relocation of an establishment with all its production facilities, account for a slightly smaller share of flows for the Centre-Val de Loire than the average for the regions, but they are still significant. However, the balance of transfers is almost zero for the region.

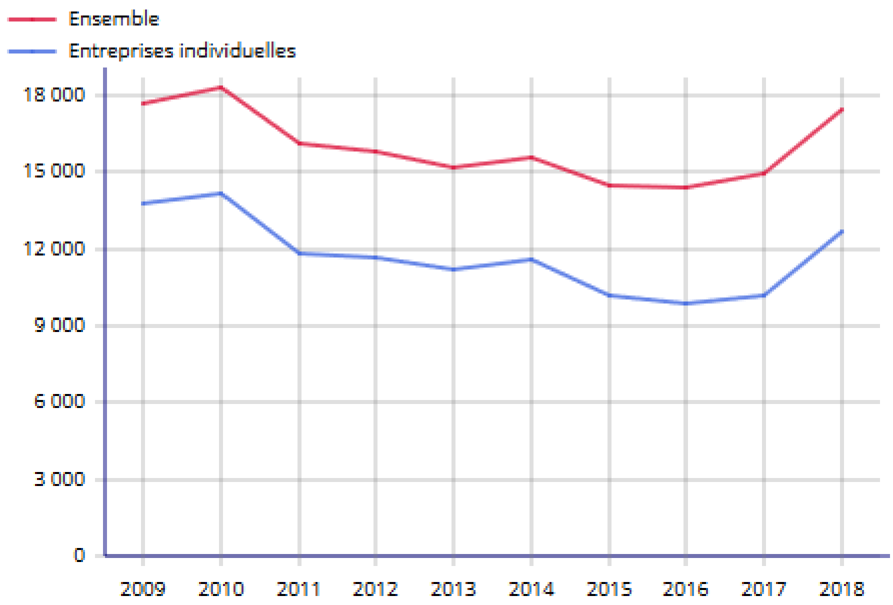
Thus, these various movements concern more than 44,000 establishments each year in the region, i.e. nearly 3% of the national total.

**CREATIONS AND TERMINATIONS, THE MAIN DRIVERS OF RENEWAL IN THE CENTRE-VAL DE LOIRE REGION**

| Annual movements | Salaried employment | | Share in France |
|---|---|---|---|
| | number | share | |
| **Creations (including reactivations)** | 18 900 | 78,7 | 3,0 |
| **Acquisitions** | 1 200 | 5,0 | 3,8 |
| **Transfers (moving-in)** | 3 900 | 16,3 | 2,8 |
| **Total entries** | 24 000 | 100,0 | 3,0 |
| **Cessations** | 15 300 | 75,0 | 3,1 |
| **Terminations** | 1 200 | 5,9 | 3,8 |
| **Transfers (removals)** | 3 900 | 19,1 | 2,8 |
| **Total outputs** | 20 400 | 100,0 | 3,0 |
| **Total Renewal** | 44 400 | /// | 3,0 |

*Source : Insee, Répertoire des entreprises et des établissements (Sirene) - Clap*

### TRENDS IN BUSINESS START-UPS




## Very small regional companies, an important link in the activity in the Centre-Val de Loire region

In 2018, the Centre-Val de Loire region will have almost 120,000 regional businesses in the mainly non-agricultural and non-financial market sectors (definitions). Of these, 77 000 are very small enterprises (definitions). The majority of these very small enterprises (VSEs) carry out almost all their activity in the region.

Nearly two thirds of regional enterprises are VSEs.

In the Centre-Val de Loire region, very small businesses account for nearly two-thirds of regional companies, a quarter of employees, turnover and investments. They contribute to 31% of regional value added but only 4% of exports by regional companies. These proportions are in line with the provincial average.

## The renewal of establishments logically leads to strong job movements.

Over the period, in the region, establishments being created, reactivated, taken over or entering the territory generated an average of 31 000 jobs per year. Conversely, 31,900 were eliminated as a result of closures, disposals or transfers.

In addition, employment fluctuated in permanent establishments over the period. Accounting only for job creation in growing establishments, 34,800 jobs were created. Conversely, 37,000 jobs were lost in declining permanent establishments.

In total, 134,600 salaried jobs, or one-quarter of the total, are thus reallocated on average each year. This rate is three percentage points lower at the national level.

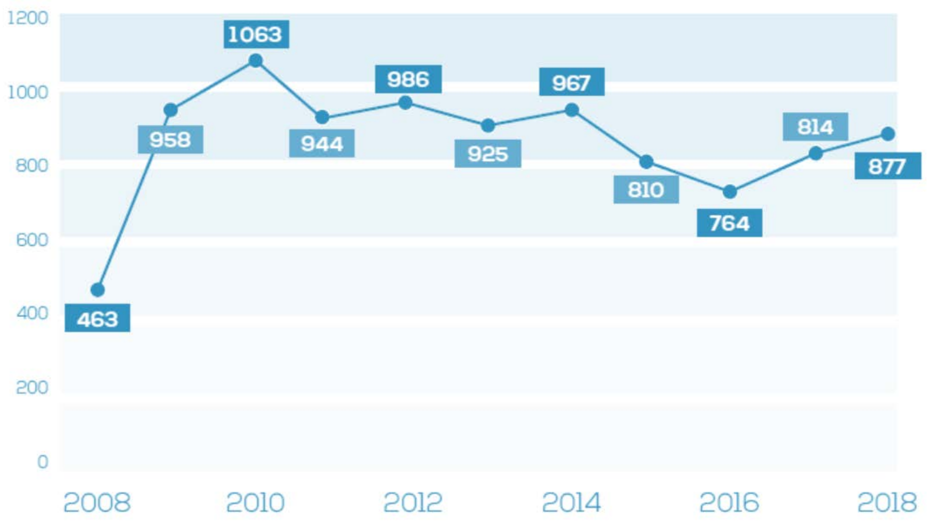
## Industry: a driving force for growth and the future in the Centre-Val de Loire region

Regional industry will employ 141,418 people by the end of 2018. Manufacturing industry accounts for almost 89% of industrial employment with 125,674 employees. Subcontractors employ more than 23,500 employees in some 1,100 establishments.

The CVL region is the fourth French region in terms of industrial employment rates in 2018. Also, industrial employment is over-represented in the Centre-Val de Loire region: whereas total regional employment accounts for 3.5% of jobs in France, regional industrial jobs account for 4.7% of French industrial jobs.

Temporary employment also boosts industrial employment: on average of 36,700 interim assignments per month in the regions, 17,000 are assignments in industry, almost half of them.

In terms of activity, 6.1% of regional establishments are industrial in nature compared to 5.3% at the national level. In addition, over the last ten years, more than 9,500 industrial enterprises, including micro-enterprises, were created in Centre-Val de Loire.




*Source : BDM Insee, créations d'entreprises dans l'industrie.*

### 89 % of the companies considered as regional

A company established in the region is not always located in a single place and its activity may extend well beyond the Centre-Val de Loire. The region can therefore represent a more or less important weight within the company, particularly in terms of the number of employees.

The Centre-Val de Loire is thus the majority location for most of the industrial companies operating in the region: 89% of companies have their headquarters in the region, and sites located in the Centre-Val de Loire represent a total of 90% of the sites they own. The fact that a large majority of firms' head offices are in the region means that they are less dependent on external decision-making centres and can therefore take decisions more quickly.

Lastly, logically, the larger the size of the firm, the smaller the proportion of firms with a majority of their headquarters in the Centre-Val de Loire region. This is the case for large international groups such as Sanofi, MBDA, Thales and Michelin. This is why 5% of companies have their headquarters in the Paris Region.

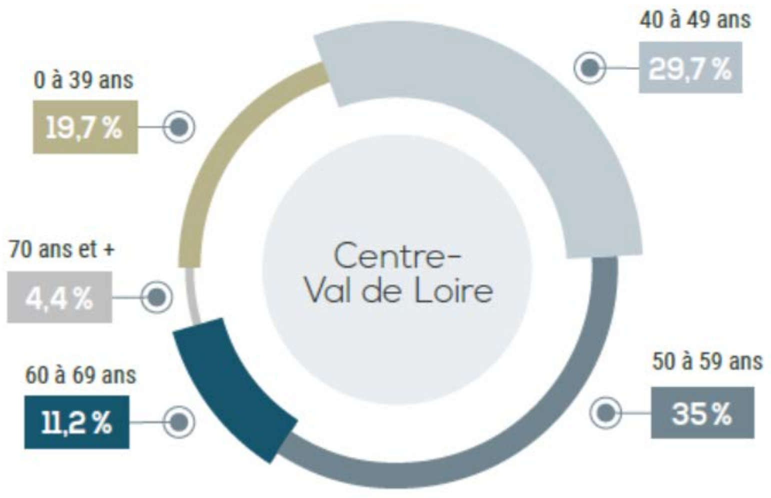
## Transmission in industry: a major issue

In France, industry is both the sector with the highest rate of ageing of managers and the one with the highest number of employees. between 2013 and 2016 and the rate of disposal of SMEs and ITEs at the end of their activity has increased the most between 2013 and 2016.

The number of shares held by the Group has decreased (it was halved over the period) according to the BPCE transfer-transfer observatory.

In France, the proportion of executives over 60 years of age reached 26%, a much higher rate than in the United States. to that of regional industrial companies (15.6%) but close to that of companies with headquarters outside the region (27.7%).

**AGE OF EXECUTIVES BY LOCATION FROM THE COMPANY'S HEAD OFFICE**

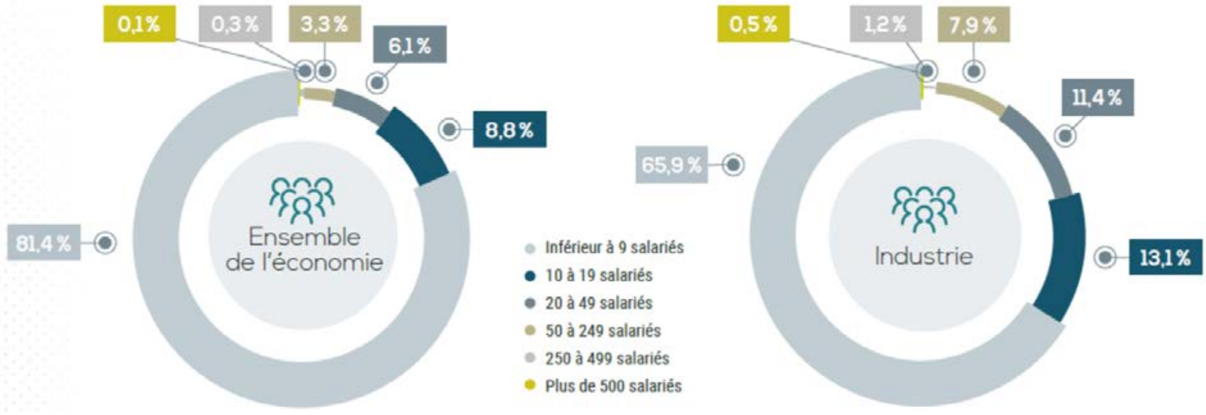



*Source : analyse Banque de France ACSEL.*

## An economic fabric 66% of which is made up of companies with fewer than 10 employees,

The average size of industrial establishments is much larger than that of regional establishments in all sectors combined: in the overall economy, 81.4% of establishments employ fewer than 10 employees, whereas in industry the figure is only 65.9%.

### DISTRIBUTION OF EMPLOYEES BY SIZE OF COMPANY IN 2018




*Source : Acoss.*

### DISTRIBUTION OF ESTABLISHMENTS BY SIZE


*en pourcentages – Source : Acoss.*

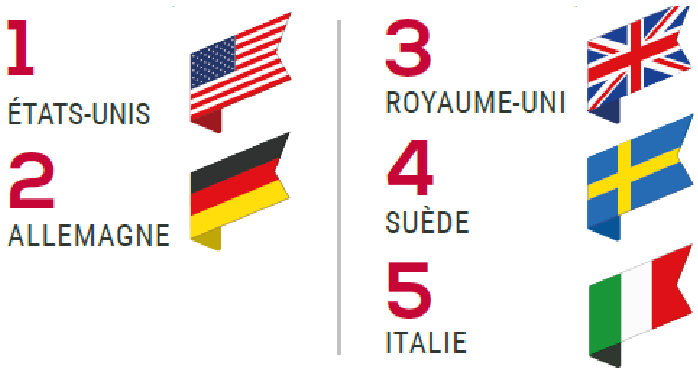
> ***+4.5%: this is the rate of growth in the turnover of industrial companies whose head office is located in Centre-Val de Loire between 2016 and 2017.***
>
> ***At the same time, their turnover increased by 13.3% between 2013 and 2017.***

## Almost a third of industrial employment controlled by foreign companies

Of the top 10 regional industrial employers, 7 are establishments belonging to foreign groups. Foreign industrial companies account for more than 45,600 employees, i.e. 32.5% of regional industrial employment. These companies, which are subsidiaries of foreign groups, make a greater contribution to the region's exports.

**TOP 5 INDUSTRIAL SECTORS CONTROLLED BY FOREIGN COMPANIES (in terms of salaried employment)**

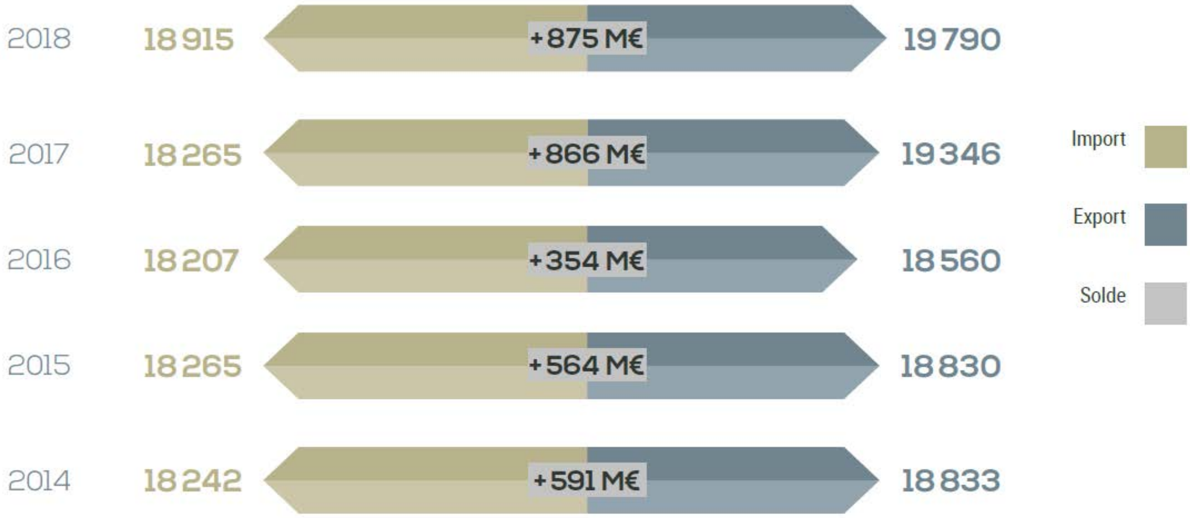

**THE TOP 5 INVESTING COUNTRIES IN REGIONAL INDUSTRY (in terms of salaried employment)**




Very large establishments are rare: only 7, located in the centre-val de loire, have more than 1,000 employees.

## Industrial Products Account For 96% Of Regional Exports

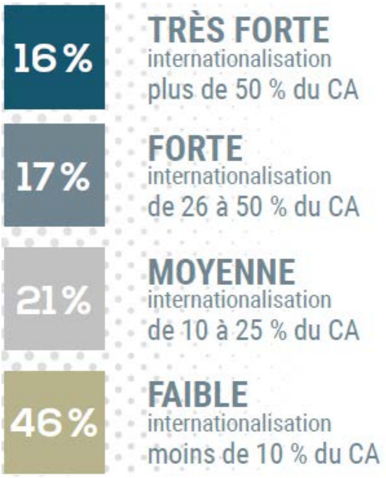
19.79 billion in 2018, up 3.6% year-on-year. In 2018, the trade surplus is the highest it has been in the last ten years, reaching nearly 900 million euros.




Almost 1/3 of the turnover of companies with regional headquarters is generated internationally, a proportion that has been steadily increasing since 2013. The rate is close to the estimated national rate of 32.1%.

The region benefits from the dynamism of exporting industries - pharmaceuticals, chemicals and cosmetics - which has compensated for the slowdown or closures of traditional industries due to the crisis. Also, exports are highly concentrated: the first two countries are exported products, pharmaceuticals, account for nearly 19% of regional exports and perfumes and cosmetics 15.4%.

**Breakdown of companies based on the international share of turnover**




*Source : Étude Banque de France ACSEL.*

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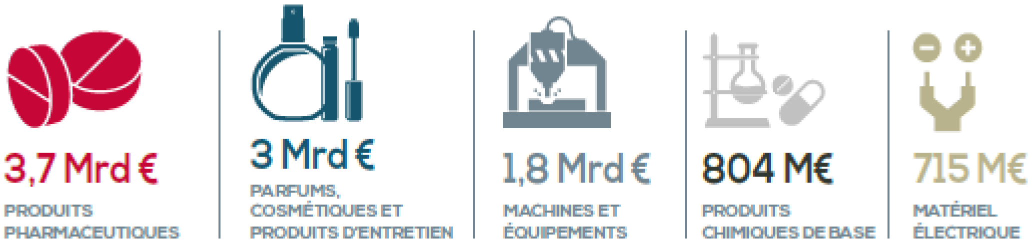
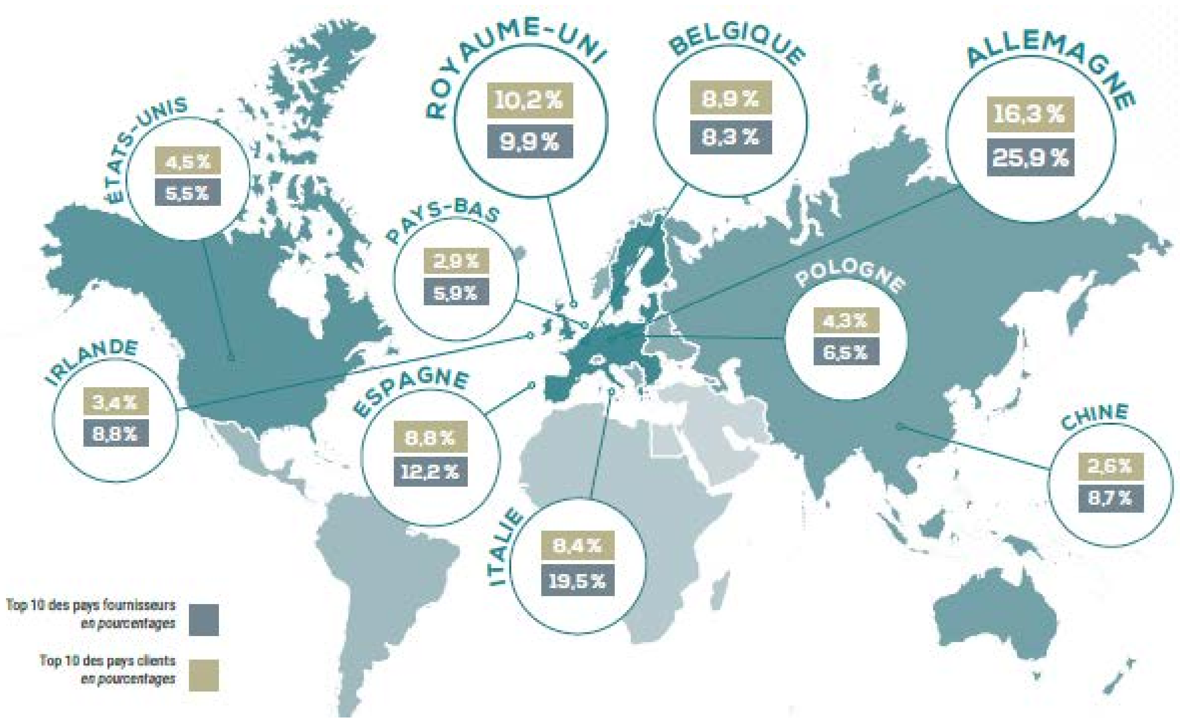
## LIST OF INDUSTRIAL PRODUCTS EXPORTED BY THE CENTRE-VAL DE LOIRE IN 2018




77.4% of regional industrial products are destined for Europe, with Germany leading the way. 2.9 billion in exports in 2018, ahead of the United Kingdom (1.56 billion) and Spain ('1.56 billion). The second client zone is Asia, which is doped by exports to China, Singapore and Hong Kong (1.14 billion euros between them).

While the United States is the 6th largest customer of regional companies, the American continent is coming to the forefront in terms of exports to China, Singapore and Hong Kong. only in 3rd place, a position due to low exports to Canada, Central and South America.

***In 2018, 16.3% of industrial exports will go to Germany.***

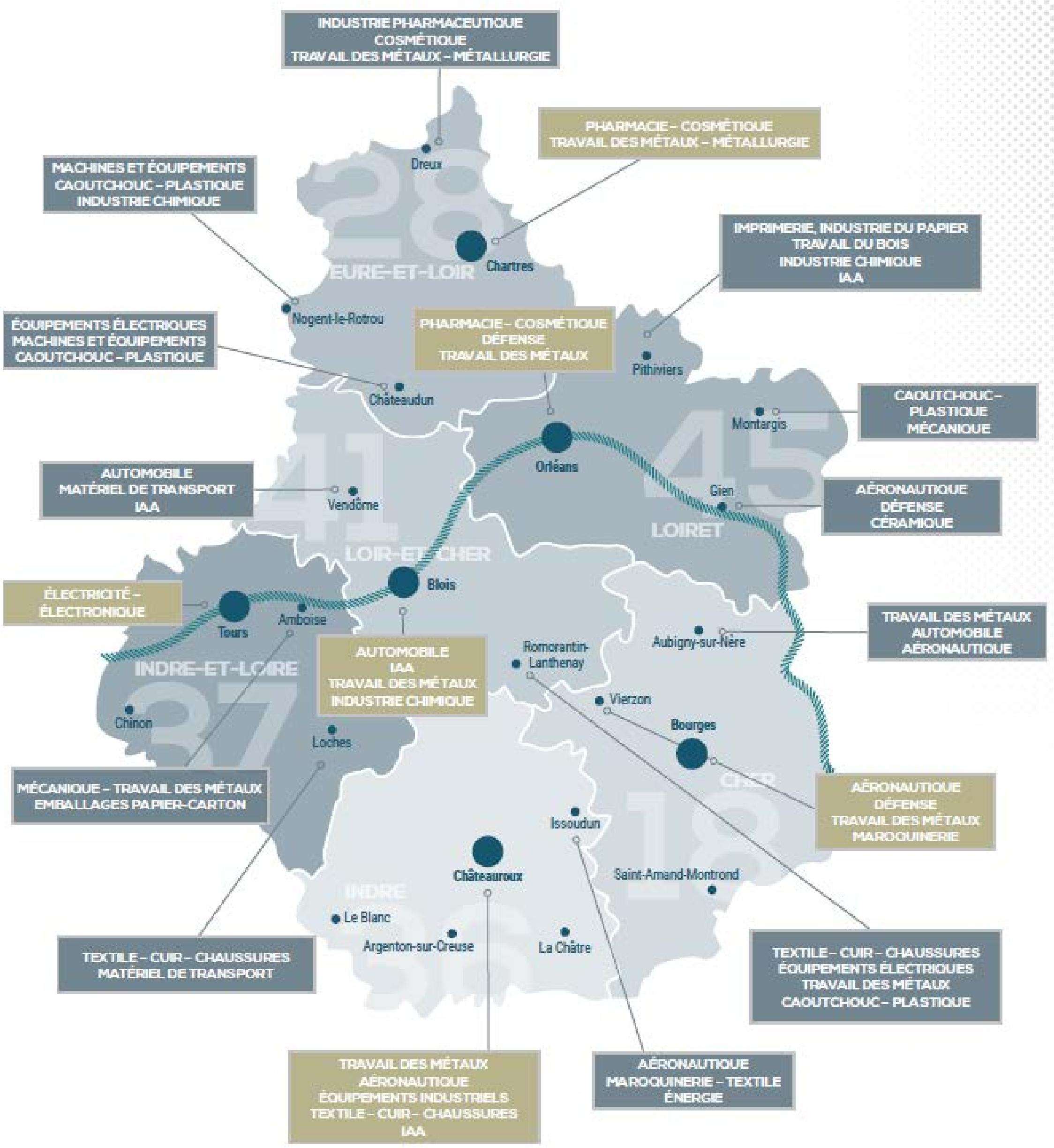


## Territorial specialisations in the Centre-Val de Loire region

In terms of geographical distribution, the share of industrial jobs in total employment (22.2% regional average) will range in 2017 from 16.4% in the Tours employment area to 47.8% in the Issoudun employment area. Employment areas of the two metropolises, which concentrate more tertiary activities, are logically at the bottom of the pack.

In terms of the distribution of jobs, the Centre-Val de Loire has an industrial fabric that is highly specialised in the following sectors pharmaceuticals, rubber - plastics, metal processing and machinery and equipment.

**A DIVERSIFIED INDUSTRY BUT LOCAL SPECIALIZATIONS.**



## 10 key industrial sectors in Centre-Val de Loire

### *Agribusiness*

- 313 establishments, 33 of which have international capital.
- 11,911 employees.
- + More than €1 billion in exports.
- Gastronomy and regional terroirs enhanced through the "C" signature of the Centre.
- A cluster for the regional sector, the Area.

### *Health (Pharmacy and medical devices)*

- 107 establishments, 37 of which have international capital.
- 13,172 employees.
- 3.7 billion € in exports.
- One cluster: Polepharma.

### *Chemicals*

- 178 establishments.
- 6,953 employees.
- 42% of the workforce in 5 establishments.
- 2 billion € of exports in 2018.
- A fine chemicals sector in the east of the Loiret.

### *Industrial subcontracting*

- 1,101 establishments of which
- 23,511 employees.
- 1.2 billion in exports.
- Main markets:
    - Automotive 17%.
    - Aeronautics 16%
    - Agri-food 11
- Main professions:
    - Metalworking 34.8%
    - Boiler making 24.8%
    - Industrial rubber 15%

### *Cosmetics*

- 51 institutions, including 9 with international capital.
- 6,026 employees.
- More than €3 billion in exports in 2018.
- Renowned brands made in the region: Christian Dior, Guerlain, L'Oréal.

- A competitiveness cluster managed in the region: Cosmetic Valley.

*Defence*

- 157 establishments.
- 13,977 employees.
- International groups: MBDA, Thales, Nexter, Roxel, Safran, Daher.
- A Defense Industries Resource Center (CID) in Bourges.
- Lahitolle, a land defense and armament innovation cluster.

*Textile - leather – clothing*

- 112 establishments.
- 4,380 employees.
- Manufacturers for prestigious luxury brands.
- 1.5 billion € of exports in 2018.
- A "Cuir du Berry" label.

*Aeronautics*

- 334 establishments, 39 of which have international capital.
- 24,237 employees.
- 538 M€ of exports in 2018.
- A regional centre of excellence: Aérocentre

*Automotive*

- 426 establishments, of which about sixty with international capital.
- 27,463 employees.
- 993 M€ of exports.
- International groups: SKF, Delphi, Robert Bosch Automotive Steering.

*Railway*

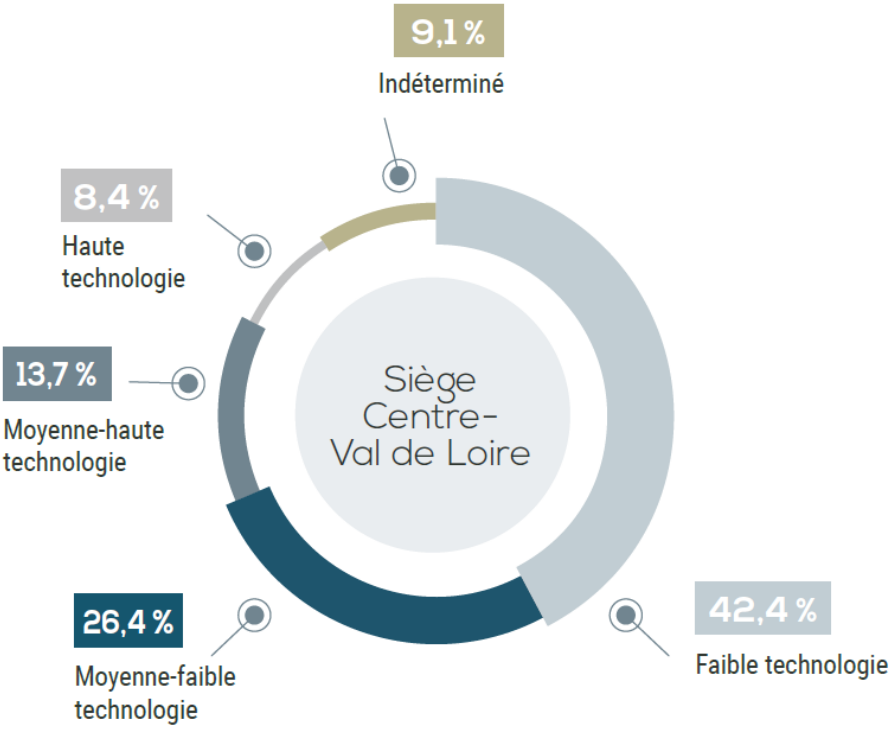
- 127 establishments, including 12 with international capital.
- 6,802 employees.
- International groups: Barat, Faiveley, Socofer, etc.

## A rather mixed industrial profile

The Centre-Val de Loire has a rather mixed industrial profile: high and "medium-low" technologies are found side by side: pharmaceutical and cosmetics industry, product manufacturing, etc. computer, electronics and optics versus rubber and plastic products manufacturing, food industry, mechanical engineering and metalworking.

> ***22,1 % of the regional companies are positioned on medium-high or high technology.***

### TECHNOLOGY BUSINESS CLASSIFICATION




Furthermore, every year, Pôle emploi (the national body in charge of managing job seekers) sends a questionnaire to many industrial establishments in the region to find out their recruitment needs in order to anticipate recruitment difficulties, improve guidance to job seekers and inform them.

In 2019, the BMO survey ("Labour Needs") reported nearly 10,000 job seekers in the Centre-Val de Loire region (or 12.7% of the region's total recruitment intentions). More than 70% of these hires are considered difficult by the business leaders interviewed.

## Traditional and "tailor-made" training courses for industry in the Centre-Val de Loire region

The training courses available in the Centre-Val de Loire cover all the following sectors industrial sectors, from aeronautics to food processing and cosmetics, pharmaceutical, railway, nuclear or electronics. All sectors combined; more than 300 initial training courses are offered by about a hundred organizations.

In addition to these training courses, there are nearly 1,000 training courses - continuing education (employees, managers, etc.) and training courses - that are offered to employees. and jobseekers) and work-linked training (apprenticeship contracts, work-study contracts, etc.). and professionalization) - offered by about 200 organizations.

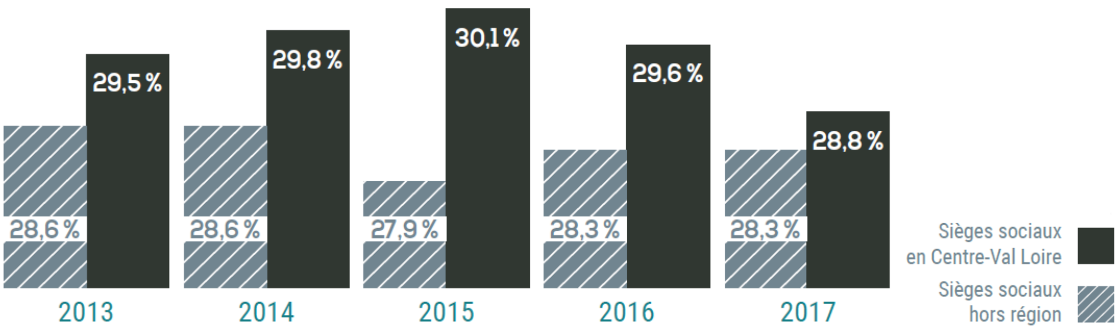
6 engineering schools in the Centre-Val de Loire form each year nearly 3,000 students;

- 2 polytechnic schools
    - In Tours: 5 specialties, 257 engineers graduated per year, 81 PhD students, 4 research laboratories of the university
    - In Orléans: 7 specialities, 300 engineers graduating per year, 70 PhD students, 8 associated research laboratories
- National Institute of Applied Sciences (INSA) Centre-Val de Loire and its School of Nature and Landscape in Bourges and in Blois
- EXIA CESI Computer Engineering School in Orléans
- Institut des techniques d'ingénieur de l'industrie (ITII) in La Chapelle-Saint-Mesmin
- HEI Campus Apprenticeship Training Centre, Specialization mechatronic/robotic in Châteauroux

## Financial structure and performance of regional industry

The value-added rate of regional industry has been declining slightly since 2015 but remains at a high level and more than 2 points higher than the national value-added rate (excluding Île-de-France).

**VALUE-ADDED RATE**




*Source : Étude Banque de France ACSEL.*

The operating margin rate, which makes it possible in particular to determine the viability of the company and to calculate its cash flow, is stable and above 6 %. However, it is 1 percentage point below the national average.

The investment rate is the share of investment in value added. It therefore gives the percentage of wealth devoted to investment each year.

In industrial companies based in Centre-Val de Loire, this rate (12.5%) is below the national average estimated at 16.9%.

The rate of obsolescence of fixed assets measures the ageing of the company's investment. Since 2013, companies at the regional head office have been constantly postponing the renewal of their equipment, resulting in a degree of obsolescence of fixed assets that is 4.6 points higher than the average for French industry (excluding Île-de-France).

## Broadening innovation and innovation diffusion

The region is considered to benefit from a favourable enabling environment in terms of Research and Development (R&D), **with 1.77% of regional GDP dedicated to R&D in 2017**. A relatively important share of the resources dedicated to **R&D is provided by the private sector (3rd rank among French regions). However, private research is highly concentrated on specific sectors, notably pharmaceuticals, chemistry and automotive industries.**

**Academic institutions in the region deliver high quality public research, structured around two universities** (Tours and Orléans) **and a network of public research institutions** (in particular: BRGM for geology/earth sciences, CEA, CNRS, INSERM, INRA) Together, they account for about **3 600 public researchers and 45 000 students at the regional level.**

**The Region can rely upon a variety of ecosystem of actors to deliver and support innovation diffusion and facilitate uptake of the resultant activities**. They include:

- State and regional services services:
- BPIFrance, the public bank for investment;
- Dev'Up, the regional economic development agency, involved in conducting and implementing the S3;
- The Chamber of Commerce and Industry;
- Regional technical centres in mechanics (CETIM Certec), and electronic and systems, with a focus on industrial innovation (CRESITT).
- SATT – Public RéD and Technology transfer organisation (C-Valo) (under reorganisation)
- Higher education institutions

    - Two universities: University of Tours (27,000 students in 2017) and University of Orleans (18,000 students in 2017),
    - Three Engineering schools: INSA (public school), HEI Campus, engineering in apprenticeship and CIMI, training and advisory centre for industrial performance.
- Public research institutes:
    - The French National Center for Scientific Research (French: Centre national de la recherche scientifique, CNRS) is the French state research organisation and is the largest fundamental science agency in Europe.
    - INRAE is France's new National Research Institute for Agriculture, Food and Environment, created on January 1, 2020, It was formed by the merger of INRA, the National Institute for Agricultural Research, and IRSTEA, the National Research Institute of Science and Technology for the Environment and Agriculture.
    - BRGM on geological sciences;
    - CEA on alternative energies and atomic energy; and
- Four headquarters of competitiveness clusters:
    - Cosmetic Valley (Chartres): quality/traceability, microbiology, toxicology, biological effectiveness, cultural and sensory impacts, sustainable cosmetic
    - DREAM (Orléans): diagnosis, monitoring, environmental information system and engineering of water resources and aquatic environments, alternative treatments of water and lands
    - Elastopôle (Orléans): raw materials and formulation improvement, manufacturing processes, nano-materials, sustainable development and eco-technologies, binding substrates
    - S2E2 (Tours): manufacturing, storage and electric networks, marine renewable energies, smart buildings, geothermal for new buildings, electronics for energy efficiency
- An Antenna of a Competitiveness Cluster
    - VEGEPOLYS VALLEY is a competitiveness cluster gathering together firms, research and training centres in the plant field around some innovative projects to strengthen the firms' competitiveness.

Since their launch, nearly 1,000 projects have been approved by the 4 regional clusters, worth more than one billion euros.

Labelled by the Inter-ministerial Committee for Territorial Development and Competitiveness, Competitiveness clusters provide a privileged working framework for the sectors under development or changing which represent the main industrial activities regional: cosmetics, environment, electronics and rubber. The 4 poles controlled from the region and the poles with which the region is associated (Végépolys Valley, Atlanpole, Biotherapies) allow strong interactions between industrial companies, laboratories, etc. and training centres.

Regional clusters include:

- AEROCENTRE (aeronautical industry);
- Polepharma (pharmaceutical industry);
- NEKOE (service sector innovation);
- AREA and Food Val de Loire (agri-food).
- Lahitolle: thematic cluster of the Directorate General for Armament "land innovation".
- GEAR, Grouping of companies in the Romorantin-Lanthenay district.
- Shop Expert Valley on fitting out of sales areas

Overall, the clusters provide a good fit with the five specialisation priorities of the region.

- Industry and professional unions (UIMM- metallurgy, UCAPLAST- Plastics, ANIA - Agrofood, LEEM - Medicines …) as well as professional training organisations (OPCA).

Additionally, one regional measure supporting research activity with high visibility is **“Ambition Recherche 2020” (ARD 2020). The objective is to steer public research towards concrete economic outputs in the 5 DPS, build high level science “clusters”, induce strong partnerships with industry and acquire an international status**. Funding goes to public labs only. The initiative has already provided an important boost in encouraging research excellence and closer industry / academic collaboration, with good interlinkages to the five DPS priorities. The five ARD include:

| Name | Thematic field, partners and objectives |
|---|---|
| ARD 2020<br>LAVOISIER | The partners of this ARD are the Region, CEA (the French atomic energy and alternative energies Commission), University of Orléans, INSA Centre-Val de Loire, CNRS, University François Rabelais of Tours, and Le Studium. It is focused around 4 thematic fields: hydrogen storage, electric energy storage, energy conversion (batteries and fuel cells) and hydrogen production. |
| ARD 2020 BIOMEDICAMENTS | Coordinated by the University of Tours, the ARD gathers as partners INRA, CNRS, INSERM, University of Orléans, the CHRU (Regional University Health Centre) of Tours, Le Studium and pharmaceutical enterprises, such as Polepharma and IMT. Its main purpose is to develop a regional research cluster, focused on biodrugs and characterised by multidisciplinary teams from several research institutions |
| ARD 2020 COSMETOSCIENCES | Coordinated by the University of Orléans in partnership with the University of Tours, CNRS, the world-class Cosmetic Valley cluster, and Le Studium, ARD 2020 COSMETOSCIENCES aims at establishing the territory of Centre-Val de Loire as an international reference in the cosmetics field, both in terms of private and public research, education and training processes, entrepreneurship and socio-economic promotion as well. |
| ARD 2020 Intelligence des Patrimoines I-PAT | IPAT offers interdisciplinary research and scientific innovation in the heritage tourism, as well as new teaching and employment. Eight founding members: University of Tours (leader), University of Orléans, CNRS, INRA, IRSTEA, INSA, BRGM, ESCEM, in addition to forty laboratories and researchers from Tours and Orléans, led by CESR (the Centre for Higher Studies of the Renaissance). |
| ARD 2020<br>PIVOTS | PIVOTS-Platforms of Innovation, Valorisation and Optimisation of Environmental Technologies- is a coordinated effort of six research platforms in environmental issues, including PRAT ('Reactivity Atmospheric Platform' with the University of Orléans and CNRS), PESAt and PESAa ('Soil-Atmosphere Platform' with INRA, the University of Orléans and CNRS), PRIME ('Platform for the remediation and innovation in Environment Metrology' with BRGM), O-ZNS ('Soil, sub-soil, water' with CNRS and the University of Orléans), PERMECA ('Sub-soil, geo-mechanic, geothermal energy' with ANTEA Group), and DECAP ('Development of sensors' with the University of Orléans and CNRS). |

**Even if the ARD 2020 programme was defined previous to the S3 dynamic, their selection if consistent with the S3 priority areas and are currently well integrated based of their capacity to generate new dynamics in the S3 DPS, in the form of new collaborations in highly innovative projects with large potential impact on regional development**. S3 has been instrumental to define a large research axis where many laboratories are clustered around an interdisciplinary topic, with a link to the territory.

**The total devoted to the programme has been 30 M€ for 'Stages 1' within three years, and a new allocation of 25 M€ for 'Stage 2' launched in 2017 (except PIVOTS), complemented with ERDF (6 M€).**

These ARD 2020 programme wants to differentiate the region as a research territory among the national and international science community, and enhance the attractiveness of talents to the region.

**They are expected to boost strong interactions between the regional stakeholders (enterprises, competitiveness clusters, associations, public institutions, etc.) but also key national and international actors.**

Thanks to their attractiveness and their integration within the Research European Area, they are expected to significantly increase the number of researchers in the territory, particularly through the recruitment of world-class researchers. Ambitious progress is expected in terms of research valorisation, with strong objectives in terms of technology transfer and innovation. They are expected to promote close and long-run cooperation with social and economic actors, whether already present within the territory or newly attracted or created (start-ups, subsidiaries of international companies…), with respect to dynamic and insightful.

**Through the ARD programme, Centre-Val de Loire wants to contribute to the emergence of several world-class research and development hubs and clusters, leading to the long-term growth dynamics in terms of research staff a genuine regional socio-economic development.**

On the issue of regional smart specialisation, the CSIL Study for EOCIC notes that:

> ***"The strong concentration of cluster membership and activity in the north of the region further undermines the capacity of the southern part of the region to attract growth and face the challenges of the industrial transition."***
>
> ***"It seems that the region has not achieved critical mass (size and specialisation dimension) in the ten emerging industries (identified by the European Cluster Observatory), in spite of the presence of well-established traditional sectors. In particular, the strong regional pharmaceuticals sector is currently transitioning towards biopharmaceuticals... More positively, all the emerging industries appear to benefit from high productivity in the region.***
>
> ***Overall, the situation may suggest the necessity to build more cross-sectoral linkages between the regional industries to fully unlock the growth potential. Existing regional clusters may contribute to strengthen these emerging cross-sectoral industries."***

**Regarding R&D and innovation, the region has a rather average overall performance according to the Regional Innovation and Regional Ecosystem Scoreboards. The main weakness of the regional ecosystem concerns various SME indicators and the region is especially characterised by weaknesses in collaboration and internationalisation, with a score of 0.39 (compared to an average of 0.47 among similar regions).**

**Collaboration between SMEs and academic or research institutions is limited, as well as collaboration between innovative SMEs although the efforts of the poles/clusters are considered to have had a positive impact here. Resources dedicated to R&D activities are also insufficient for these companies, in terms of staff, time, funding and skills. Industrial SMEs are often not able to allocate substantial resources to R&D because of their position in the value chain, and they will often lack the required staff to undertake collaborative research/innovation actions.**

It is worth noting that collaboration between large companies and academic research have historically been successful, contributing to the resilience of some parts of the region (e.g. in the defence industry). According to the Regional Ecosystem Scoreboard, the region has a rating of 0.54 in the theme “access to public finance” which is high compared to similar regions. However, there are concerns that the public funding schemes do not cover properly all the different stages of an enterprises’ lifecycle (notably for scale-ups).

# 3. The policy instrument

## 3.1. Overall description of the policy instrument

### The Centre-Val de Loire RIS3

The RIS3 of the region have all highlighted the importance of tackling industrial transition challenges and numerous actions have been deployed and financed through structural funds. The key strategic focus encompasses the following elements:

- To encourage all types of innovation by strengthening regional research and innovation capacities;
- To make ecological transition an asset for the industrial fabric of the region;
- To strengthen the region's attractiveness (for investors and employees) by building on key industry sectors (such as pharmacy, chemistry, cosmetics, mechanical equipment, electrical, electronic and computer equipment) and on tourism sectors having an international dimension;
- To enhance the creative capacities of companies through the human capital (managers and engineers)
- To increase the number of innovative companies from 1000 to 1500 by 2020.

A particular priority has been given to SMEs and notably designing horizontal financial instruments that can help them adopt new and disruptive technologies. The DPS (RIS3 priorities) associated with some 11 regional Poles/ clusters also form an important ingredient in this policy mix.

In December 2013, the Region has adopted the following five smart specialisation strategy priorities (DPS):

- Environmental Engineering and Metrology for High Resource-consuming Activities including environmental monitoring, rehabilitation, drainage and treatment; DPS1
- Biotechnologies and Services for Health and Cosmetic Industries, innovative activities for improved supply chain network among regional actors DPS2.
- Design of Systems for Energy Storage, technical and chemical components assembly to improve energy transfer DPS3;
- Energy Efficiency Technologies for Construction, Use and Renovation of Buildings, including passive and active energy systems DPS4;
- ICT and Services for Heritage Tourism, innovative services to promote cultural tourism DPS5;

(DPS = Domains of Potential Specialisation).

The S3's goal is to transform the economic structure of the region, by capitalizing on regional strengths, in different ways:

- Adaptation of existing strong sectors, such as electric equipment (further development of new and renewable energy sources); new application of geological knowledge, e.g. for pollution treatment, by creating new interfaces between various specialist knowledge (e.g. soil and sub-soil analyses);
- Fostering radical transformation in existing activities through the introduction of new technologies: from manufacturing of chemistry-based medicines to biomedicines;
- Creating new industries based on new combinations of knowledge bases: new museology solutions for the tourism sector (in need of “dusting”) based on regional competences in history; ICT; anthropology; sociology; soil occupation; zoology (deers), etc.

In 2019, Dev'up continued the mid-term evaluation of the SRI-SI begun at the end of 2017. The aim was to update the data on the five RIS3 priorities to measure changes and characterize a potential 6th Domain according to the same methodology. DEV’UP shared the feedback from each of the evaluated or characterized areas with the main actors in order to jointly develop a SWOT matrix and recommendations.

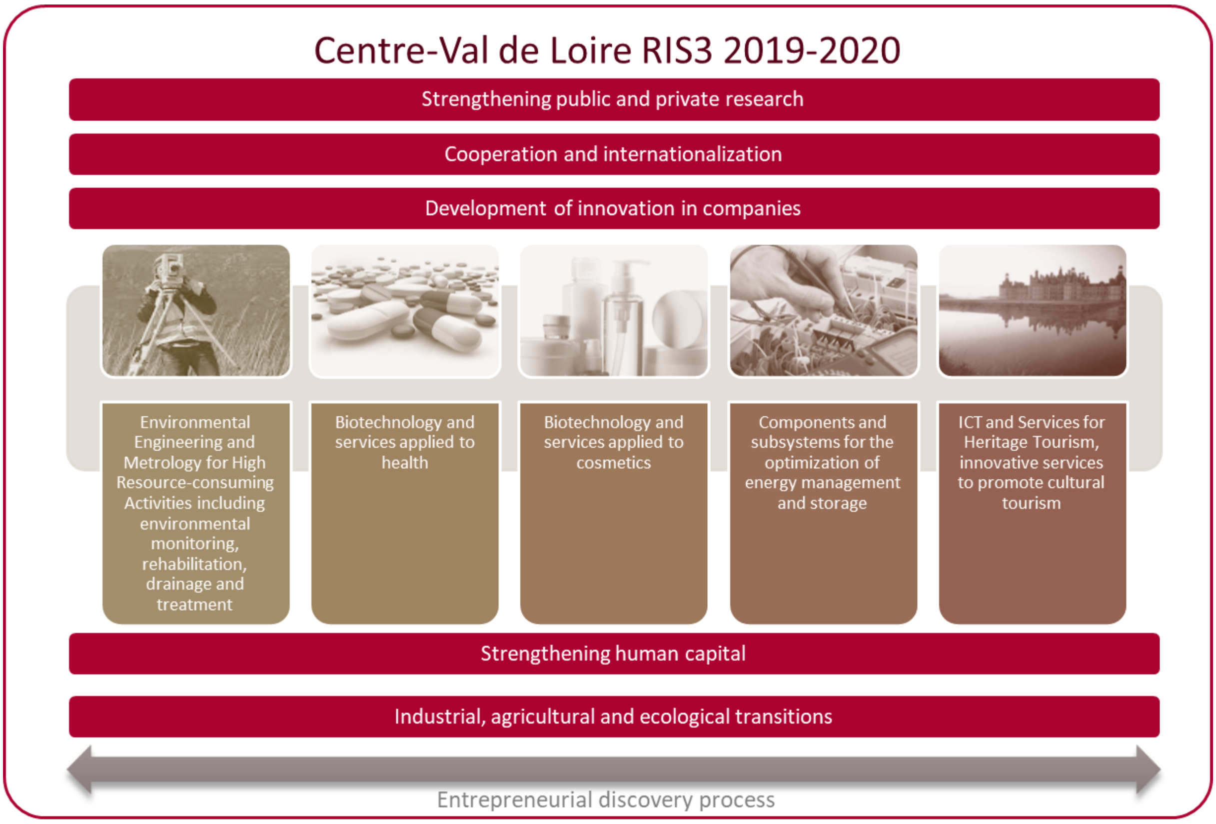
The result of this evaluation was presented at the Regional Strategic Innovation Committee meeting held on December 18 in Orléans. **During this steering meeting, a change in the scope of SRI-SI was recorded**:

- **With the integration of a new horizontal priority "Industrial, agricultural and ecological transitions**". The Regional Council and relevant innovation stakeholders have agreed that, following the mid-term S3 review in 2018, to introduce this specific horizontal programme support measure that will aim to provide support to SMEs facing transition challenges and notably those in the industry and agri-food sectors but also the farming/forestry sectors.

- With the division of the priority "Biotechnologies and services applied to health and cosmetics" into two priorities: "**Biotechnology and services applied to health" and "Biotechnology and services applied to cosmetics"**.

- With the merging of the priority "Design of energy storage systems" with "Energy efficiency technologies for the construction, renovation and use of buildings" to become: "**Components and subsystems for the optimization of energy management and storage".**

From now on, CVL's RIS3 takes the following form:




**Access to skills and competence is seen as a major issue by regional stakeholders, across the different sectors and clusters. Regional companies are often unable to successfully outline their needs in terms of skills and are faced with recruitment difficulties.** This was confirmed during the regional workshop held in Orléans on the 20th of December attended by a cross section of regional clusters/competitiveness clusters and RDI stakeholders in DEV'UP premises. According to Pôle Emploi, 48.5% of recruitments are deemed difficult in 2018, higher than the French average of 44.4%. These difficulties are related to vacancies for highly skilled positions (e.g. engineers or medical doctors) but also skilled technicians (e.g. metallurgy). Some of the reasons for these difficulties include:

- Regional and sectoral attractivity problems (especially competition from the proximity with Ile-de-France), associated to the training capacities but limited retention of graduates.
- Limited regional qualification levels (e.g. 30.2% of working age population with tertiary education in 2017 at the regional level, compared to 35.2% for France),
- Limited management/HR capacities,
- Lack of adapted competence is especially acute in sectors such as cosmetics and pharmaceuticals.

Furthermore, a joint APEC and DEV'UP study undertaken in May 2018 and presented to stakeholders on the 8th of November has further underlined the **challenges for existing companies to retain and upskill current staff and also to attract new talent to the region, especially managers (cadres).**

**The recent report by CSIL and other regional commentators believe that the relatively even specialisation pattern of the region can be considered to be an asset in as much as it gives to (some) firms the opportunity to diversify their markets and cushion possible negative evolutions in given sectors. At the same time, it discourages stakeholders from concentrating resources and making corresponding strategic policy choices.**

**Other important factors concern the position of regional firms in value chains, with decision centres often outside of the region which makes them in principle more vulnerable to external factors. Given the importance of subcontracting for the region, much of the future economic performance depends on the ability of enterprises and SMEs in particular to adjust their positions in value chains, and to access global value chains.**

**The current S3 strategy includes a number of new tools aimed at helping SMEs adapt to industrial transition challenges,** for example the Factory of the Future initiative seeks to support 50 SMEs on industrial performance issues with a particular focus on sub-contractors. The initiative also takes into account the human/skills factor.

## The link with the ERDF-ESF OP

For the period 2014-2020, the Centre-Val de Loire Region has become the Managing Authority for the 2014-2020 ERDF-ESF Operational Programme (OP) for the Centre-Val de Loire region, which makes it possible to mobilise assistance from the European Regional Development Fund (ERDF) on the territory.

The Centre-Val de Loire ERDF-ESF 2014-2020 OP was officially approved by the European Commission on 26/11/2014.

With an overall budget of almost €270 million, the ERDF-ESF Centre-Val de Loire 2014-2020 OP will mobilise a total of €56.1M from the ERDF for increasing the critical mass, visibility and attractiveness of areas with high development potential (RIS3 priorities) and strengthen the links between public research and the economic fabric.

It is also a question of increasing the number of innovative enterprises (from 1 000 to 1 500) by enabling them to increase the number of products and services they can offer (incorporating a higher degree of innovation and increasing technological intensity). The ERDF must also help to change the regional economic fabric from a "product offer" approach to a "global solutions" approach by integrating more innovative services and thus enable businesses to develop their margins and differentiate themselves from their competitors by building innovative and sustainable economic models.

**As you will see from the following paragraph, the strategy of intelligent regional specialisation and in particular its 5 priorities are at the heart of many of the measures under Axis 1 of the ERDF OP.**

### *Axis 1: A knowledge-based society: 54.4 M€ ERDF*

Axis 1 is broken down into strategic objectives supported by a number of actions. We will therefore go into detail about these actions

### Specific Objective 1.A.1: increase investment and skills in specialization areas

**<u>Action 1 - research investment in potential areas of specialisation (RIS3 Priorities)</u>**

**OBJECTIVES**:

- To increase the critical mass, visibility and attractiveness of the Areas of Specialisation selected in the regional innovation strategy (SRI-SI) in terms of:
  - research equipment;
  - numbers of public and private researchers.
- To develop a space conducive to the short and long-term development of cooperation between the various players in each RIS3 priorities via the use of this equipment by a network of laboratories and/or companies.

**SUPPORTED ACTIONS**:

- Acquisition of structuring equipment for research and/or shared with enterprises, including the necessary upkeep or maintenance
- Animation around the supported equipment making it possible to increase the number of beneficiaries and the impact of their use:
  - Scientific and technological monitoring;
  - Prospecting for and meeting with academic and socio-economic partners;
  - Monitoring of equipment;
  - Coordination of the operation of equipment; etc.

**ACTIONS EXCLUDED FROM EUROPEAN FINANCING:**

All actions relating to land, buildings housing equipment, whatever their form (rental, purchase, construction, renovation, upgrading, etc.).

**POTENTIAL BENEFICIARIES:**

- Research and knowledge dissemination organizations including:
  - -public higher education and research establishments;
  - -technology transfer structures and innovation intermediaries, in particular technology resource centres, technology platforms or technology dissemination units;
- private companies and research centres.

**ELIGIBILITY CRITERIA:**

- Beneficiaries must be located in the Centre-Val de Loire region.
- Projects falling within the Potential Areas of Specialisation (RIS3 Priorities)

**Action 2 - research programmes and projects in potential areas of specialisation (RIS3 Priorities)**

**OBJECTIVES**:

- To increase the critical mass, visibility and attractiveness of the Potential Areas of Specialisation selected in the regional innovation strategy (SRI-SI)
- To develop partnerships between public research operators and companies
- To contribute to the acquisition of new knowledge and skills, accessible to companies in their approach to innovation and the development of new products and services.

**SUPPORTED ACTIONS:**

Projects involving basic research, industrial research, experimental development and feasibility studies:

- Projects involving one or more laboratories and research establishments
- Research and development and innovation projects carried out by an enterprise with a proven economic and social impact on the regional territory
- Collaborative projects involving at least two regional enterprises independent of each other, or an enterprise with one or more public research centres.

**EXCLUDED FROM EUROPEAN FUNDING:**

- Experimental development does not include routine or periodic modifications to existing products, production lines, manufacturing processes, services, and other operations in progress, even though such modifications may represent improvements.
- Projects involving only a subcontracting relationship between partners.

**POTENTIAL BENEFICIARIES:**

- Research and knowledge dissemination organizations including:
  - public higher education and research establishments;
  - technology transfer structures and innovation intermediaries, in particular technology resource centres, technology platforms or technology dissemination units;
- private companies and research centres.

**ELIGIBILITY CRITERIA:**

- Beneficiaries must be located in the Centre-Val de Loire region.

- Projects falling within the Potential Areas of Specialisation.

## Specific Objective 1.B.1: increase the number of innovative companies in the Centre-Val de Loire region by 50%.

**Action 3 - actions aimed at providing a favourable environment for enterprises in their innovation endeavours**

**OBJECTIVES**:

- To increase the number of innovative companies (from 1000 to 1500) by enabling them to increase the number of products and services they can offer => to integrate a higher degree of innovation and/or to increase technological intensity
- To develop the regional economic fabric from a "product offer" logic to a logic of global solutions by integrating more innovative services and thus enable companies to develop their margins, to differentiate themselves from their competitors by building innovative and sustainable economic models.

To achieve this

- Develop a structured network with tailor-made services that also focus on the valorisation and internationalisation of public research and the dissemination of scientific and technical culture
- Pursue efforts to acculturate to the approach of innovation through services and to the economy of functionality through awareness-raising and training actions for economic actors.

**SUPPORTED ACTIONS:**

The actions supported should aim to strengthen support for innovation and technological dissemination, the development of research-business interactions, with a view to improving and adapting the range of services provided to businesses and mobilising all those responsible for economic development, innovation, technology transfer and research.

- Animation of the DPS: animation program set up in each of the fields of specialization retained in the SRI-SI (Studies, animation of working groups, etc.), in order to improve and adapt the offer of services provided to companies, and to mobilize all the actors in charge of economic development, innovation, technology transfers and research.) - follow-up of the SRI-SI;

- Coordination of the actors of the support to innovation in a logic of referent network (for example the animation of the Innovation Centre Network) to sensitize the regional companies to innovate;
- Actions of sensitization and training intended to increase the competences in the field of innovation by the services and to direct the companies towards the economy of functionality;
- Structuring of the offer of service to the companies as well on the technological offer as on the programs of diffusion of innovation
- Actions to support the international visibility of research organisations and universities based in the region
- Actions aimed at increasing skills in support of service innovations and the orientation of enterprises towards the economy of functionality;
- Actions aimed at the dissemination of scientific and technical knowledge,
- Actions in favour of the transfer and exploitation of technologies to enterprises to generate economic applications

**POTENTIAL BENEFICIARIES:**

- Research and knowledge dissemination organisations:
  - public higher education and research establishments;
  - technology transfer structures and innovation intermediaries, in particular technology resource centres, technology platforms or technology dissemination cells;
- Companies;
- Clusters;
- Consular chambers;
- Associations implementing action programmes designed to support the international visibility of research and higher education establishments in the Centre-Val de Loire Region;
- Structures for the dissemination of scientific, technical and industrial culture.

**ELIGIBILITY CRITERIA:**

Action programmes specifically dedicated or providing enhanced support to regional beneficiaries for :

- -The coordination of actors
- -Actions related to innovation through services
- -The structuring of the offer of services to enterprises
- -Actions for the internationalisation of research organisations
- -Actions for the dissemination of scientific and technical knowledge -Actions in favour of the transfer and valorisation of knowledge to enterprises.

**Action 4 - individual research, development and innovation projects by firms with a well-informed economic and social impact on regional territory**

**OBJECTIVES:**

- To increase the number of innovative companies (from 1,000 to 1,500) by enabling them to increase the number of products and services they can offer => to integrate a higher degree of innovation and increase technological intensity
- To develop the regional economic fabric from a "product offer" logic to a logic of global solutions by integrating more innovative services and thus enable companies to develop their margins, to differentiate themselves from their competitors by building innovative and sustainable economic models.

**SUPPORTED ACTIONS OUTSIDE RIS3 PRIORITIES:**

- Individual research and development and innovation projects of enterprises which may concern: technological innovation work, design, emergence of new innovative products or services, process, organisational, marketing and commercial aspects
- Industrial research projects
- Experimental development projects
- Process and organisational innovation projects
- Feasibility studies
- Innovation projects, development and fine-tuning and/or industrial and commercial launch including pre-pilots, pilots or demonstrators

**EXCLUDED FROM EUROPEAN FUNDING:**

Experimental development does not include routine or periodic modifications to existing products, production lines, manufacturing processes, services, and other operations in progress, even though such modifications may represent improvements.

**POTENTIAL BENEFICIARIES:**

Enterprises: all types of enterprises and, as a priority, SMEs and ETIs

**Action 5 - collaborative research, development and innovation projects**

**OBJECTIVES:**

- To increase the number of innovative companies (from 1,000 to 1,500) by enabling them to increase the number of products and services they can offer => to integrate a higher degree of innovation and increase technological intensity

- To develop the regional economic fabric from a "product offer" logic to a logic of global solutions by integrating more innovative services and thus enable companies to develop their margins, to differentiate themselves from their competitors by building innovative and sustainable economic models.

**SUPPORTED ACTIONS:**

Projects associating regional enterprises with other enterprises independent of each other or an enterprise with one or more public or private research centres:

- industrial research projects;
- experimental development projects;
- feasibility studies;
- process and organisational innovation projects; innovation, development and fine-tuning projects and/or industrial and commercial launches including pre-pilots or demonstrators.

**EXCLUDED FROM EUROPEAN FUNDING:**

Experimental development does not include routine or periodic modifications to existing products, production lines, manufacturing processes, services, and other operations in progress, even though such modifications may represent improvements. Projects involving only a subcontracting relationship between partners

**POTENTIAL BENEFICIARIES:**

- Research and knowledge dissemination bodies
- Higher education and research establishments
- Companies: all companies and, as a priority, SMEs and ETIs.
- Public and private research centres
- Clusters
- Consular chambers

**ELIGIBILITY CRITERIA:**

Project partners located outside the Centre-Val de Loire Region will not be able to benefit from this measure.

## 3.2. Design or the policy instrument

**During the preparation of the new RIS3- Regional Innovation Strategy for Smart Specialisation, one of the key challenges for the regional industry was to retain value-added in the region and resist delocalisation pressure. Considering the region suffers from a weak identity and lacks visibility, the attraction of talents and investors are the main concerns.** The impact of national and regional STI policies is visible in the regional innovation ecosystem, which has been better structured, with four Competitiveness Clusters and other clustering initiatives. In addition, networks support cooperation and the creation of a critical mass in the productive sector, through the facilitation of interactions between business and public research**. In 2012, innovation support was recognised as the highest priority by the State and the Region policy makers. This favourable context raised awareness about the need to enhance further the efficiency and the impact of the 'research and innovation' policy.**

**Notably, a deep and lasting consensus has been built on the crucial role of innovation for regional development; and permanent governance structures have been established - a Strategic Regional Innovation Council and a Regional Innovation Conference.** Within this favourable policy context, the Smart Specialization Strategy concept has been embraced in the region at an early stage (before its adoption as an ex ante conditionality for Structural Funds) and endorsed both by high-level political authorities and by the regional development agency DEV'UP (formerly ARITT, the regional innovation agency. The latter played a catalytic role in translating the European concept in the region and in designing the S3.

**Furthermore, Dev'up because it was both close to the ground (due to the animation of the innovation support ecosystem and its direct contacts with regional innovative companies), but also because of its proximity to the regional public authorities (State and Region) not only designed RIS3 but was also involved in the elaboration of axis1 of the thematic objective 1 of the ERDF OP.**

The regional agency continues to play an orchestrator role in S3 implementation.

As a result of the regional S3 mobilisation, in March 2012 the 'Committee of Research and Innovation' of the Region validated the S3 Roadmap and moved from the previous RIS programme to the new S3 process. **The main lessons drawn from the adoption of the S3 Programme were observed in terms of regional governance issues, with a genuine identification of useful resources, adoption of Potential Specialisation Domains (DPS) and a full acceptance by the main territorial actors.**

First of all, unlike other regions, **the CVL region decided to start from a blank page to identify its regional development priorities.** Admittedly, the drafting of the RIS3 was based on a global regional diagnosis and a SWOT analysis of the innovation ecosystem (available as an annex to the RIS3). On the other hand, the Operational Committee (in charge of the design and the follow-up of the RIS3) decided that rather than relying on strong signals regional that represented the competitiveness clusters (4 in the CVL region) or sectors of flagship activities (cereal production, industrial subcontracting, pharmacies-cosmetics,), it would give priority to business managers. It is up to them to identify opportunities to market and to determine the territory's ability to seize it to generate growth and in of jobs. In this task, they received the support of the innovation agency which, through its cell territorial intelligence on the one hand, and its network of field advisors in connection with the innovation support ecosystem and companies were able to help them identify the market opportunities and skills (scientific, educational and entrepreneurial) present in RCVL.

Thus, on the basis of this hypothesis, several working groups were organized to define which could be the potential areas of specialisation (DPS) of the Centre-Val de Loire region.

Two thematic workgroups (composed by 20-30 entrepreneurs selected in each workshop) investigated the potential areas of specialisation within the two themes mentioned in the first RIS (the energy efficiency and the innovative associated services) by applying an analytical framework.

A third workshop, was organized to investigate other potential specialisation area(s). It was composed by the ecosystem representatives (2 Universities, 6 Research Institutes, 4 clusters, the Regional Chamber of Commerce and Industries, the Regional Chamber of Agriculture, the Regional Chamber of Craft, the employers' federations, the Regional Economic and Social Committee).

The territorial strategic intelligence unit of Dev'up (Formerly ARITT Centre) conducted the creativity debate within the 3 work groups and carried out the analysis of the potential priority domains (or Potential Specialisation Areas).

**Thus, the three workgroups were asked to argue their proposals and make choices to justify the existence of a comparative advantage of the Centre-Val de Loire region, to specify the possible cooperation and to verify the existence of a critical mass.**

The objectives of these creativity sessions to identify potential areas of specialization were:

- Present the smart specialization and its challenges for the Centre region
- Present the underlying concepts of DPS identification through diagnostic tools
- strategic.
- Ensure that the members of each group had the same and accurate understanding of what we were looking for when we talk about DPS
- Develop lists of SDA proposals
- Validate those considered collectively as more relevant according to a list of criteria based on the underlying assets

A larger consultation and information process were undertaken during the regional innovation conference. The Regional Innovation Conference audience was fully involved in the consultation process. It was asked to rule on a list of priority areas and propose new areas.

The choice criteria were the famous RIS3 "4C": (Tough) Choices and Critical mass, Competitive Advantage, Connectivity and Clusters, Collaborative Leadership. Moreover, the governance of RIS3 focused on the impacts for the region, and on the ecosystem acceptance. The members of 3 workshops were required to comment on the adequacy of their proposals with the 4 key criteria RIS3.

This adequacy was fully characterized during the analysis phase.

With hindsight, the constitution of these two groups of entrepreneurs selected from among those who have region were identified as involved in economic development and had a vision that extended beyond their own activity was positive. Indeed, the concept of "potential area of specialization" has been developed with them based on diagnostic methods of a territory. Before identifying priorities, it was necessary to agree collectively on what was an intelligent specialization priority for the regional territory. Thus, **all the priorities that emerged from the working groups were built around the following model: a set of know-how or innovation capacities present in the regional territory for a market application identified. This semantics has been used for the five priorities (DPS) finally retained.**

**In our opinion, involving company managers in the very construction of the "domain" concept potential for specialization" has allowed it to be legitimized vis-à-vis other stakeholders (the public decision-makers, research organisations and innovation support actors).**

**In addition, the fact that the company managers were first made to work from a blank page and then associated with the earliest phase of priority identification has made it possible to involve the key entrepreneurs in the region and to protect themselves in part from the influential actions of the actor's representative of the economy and research. The latter have also been consulted within a dedicated group, which complemented the proposals of company mangers. This method has made it possible to make the list of proposals more exhaustive by not limiting itself to not a priori to the "strong signals" of the territory while circumventing lobbying actions.**

**Only then were the priority proposals submitted for further study by from an outside firm to verify whether the leads that had emerged from this "process of Entrepreneurial discovery" were able to satisfy 4 selection criteria: Targeting of choices, Presence of a comparative advantage, Existence of an existing or potential critical mass, Capacity to establish intra- and inter-regional cooperation.)**

**As a result, value chains analyses have been undertaken under the supervision of DEV'UP, in cooperation and by agreement with the largest panel of regional stakeholders, including the relevant higher-education-and-research fields, to ultimately achieve the following S3 priority areas.**

For each of the RIS3 priorities, a detailed analysis of the value chains involved was carried out. It made it possible to highlight for each link in the value chain, the companies concerned. Similarly, on each of the value chains, public and private research centres, training and innovation networks have been identified.

**Once, the priorities areas identified and validated by the Regional Innovation Steering Committee, the pilots coming from the economic sector and the co-pilots from the academic**

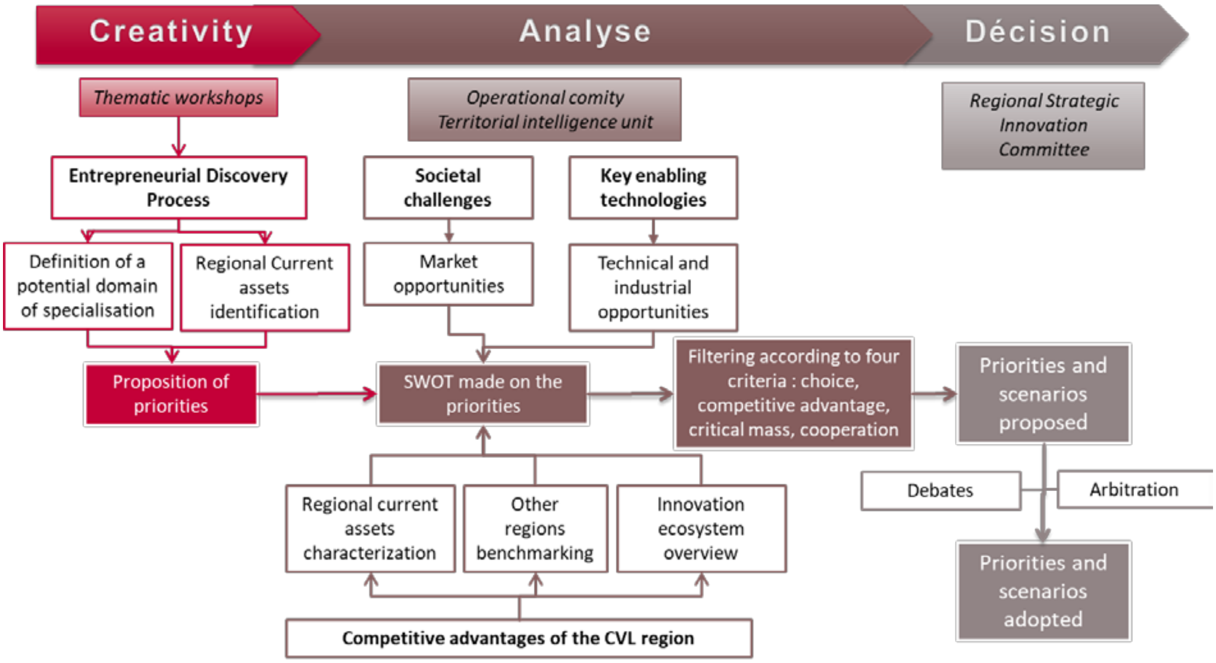
**sectors in the priority domains were designated to carry out scenarios for these Potential Specialisation Areas.**

In order to elaborate the scenarios, the pilot and co-pilot of each priority area launched a concertation process with the stakeholders (entrepreneurs, researcher, and users) to identify the actions plan to respond to the main issues of their domains. **This concertation process resulted to some recommendations for each potential domains of specialisation. These recommendations were displayed through the ARITT Web site to large audience for a consultation process**.

**Finally, these recommendations were presented by each pilot and co-pilot during a meeting of the Regional Innovation Steering Committee.**

**The Steering Committee validated ultimately the priorities and scenarios proposed after debates.**

**RIS3 was finally adopted unanimously by the Regional Council on 19 December 2013.**




**In the end, the potential areas of specialization that emerged from this analysis of value are the result of combining different maturity and capacity value chains different entrepreneurial approaches, but also political arbitrations by public authorities. Thus, from the same way that a company manages a product portfolio whose market size or growth potential varies, the Centre-Val de Loire region has also acquired a portfolio of domains with heterogeneous but complementary development profiles.**

### 3.3. Map of the policy mix

To draw up the mapping of services to RDI players in the Centre-Val de Loire region, we drew inspiration from the tools and methods of the book "Regional Policy for Intelligent Growth of SMEs" written by Christian Saublens from Eurada.

| Objectives | Dedicated Tools | Practices referenced in CVL region |
|---|---|---|
| ***Increasing the number of enterprises engaged in R&D activities*** | **Enterprise / university networks** | • competitiveness clusters (4 +1 in CVL region)<br>• Thematic Research Network<br>• Ambition Research Development (ARD) consortia |
| | **Grants for R&D activities** | • ARD (Ambition Research Development)<br>• Call for project Research (Regional grants for academic research)<br>• CAP R&D and Innovation, (Regional grants for enterprise research)<br>• Bpifrance aids |
| | **Feasibility studies to access grants** | • CAP R&D and Innovation (Regional grants for enterprise research)<br>• Bpi France aids |
| | **Reimbursable loans** | • Bpifrance aids |
| | **Research intensive clusters** | • competitiveness clusters (research clusters) |
| | **Vouchers** | • Innovation Diagnosis (Technologic Service from the Network: 10 000€ for primo-innovators) ,<br>• AIR (Regional Innovation aid),<br>• ICT voucher |
| | **Advice and support for feasibility studies to participate in transnational consortia** | • EEN (Enterprise Europe Network) in Dev'up and CCIR =,<br>• CMER (team for the promotion of European cooperation in the universities and CNRS),<br>• réseau EUCLIDE (network for the promotion of European cooperation) |
| ***Commercialisation of R&D results through spin-offs/ start-ups*** | **Proof of concept** | • CAP, (Regional grants for enterprise research)<br>• Bpi France Aids |
| | **Seed capital** | • Loire Valley Invest |
| | **Incubators** | • A lot : (Lab'O, MAME, Lahitolle, CEEI28, Food Val de Loire), 1 private incubator (Pentalog) |
| | **Prototyping** | • Industrial Lab,<br>• CRESITT,<br>• ICERMA,<br>• CETIM CVL |
| | **Fab labs** | • 6 : 1 by department |
| | **Living labs** | • no |
| | **Accelerator** | • Impulse (37),<br>• CEEI Chartes (28),<br>• Lab'O (45) |

| | | |
|---|---|---|
| | | • Regional Accelerator (CVL Region-Bpifrance)<br>• Scale'up (Dev'up) on access to finance |
| | **Coaching/ mentoring** | • EEN (KAM/EIMC),<br>• Start-up Week-end,<br>• RCVL Bootcamp<br>• Impulseur,<br>• Saxo 45<br>• private consultancy |
| | **IPR valuation** | • IP Consultancy,<br>• INPI,<br>• SATT (C-Valo) |
| | **Technology brokerage** | • EEN (Dev'up / CCI -CVL) |
| ***Supporting service innovation*** | **Living labs** | • No |
| | **Voucher for design advice** | • CAP (Regional Innovation aid),<br>• AIR (Regional Innovation aid), |
| ***Improving the quality of R&D+I infrastructure*** | **Grants** | • ARD (Ambition Research Development),<br>• ERDF |
| ***Supporting the introduction of new innovative products/ services to the market*** | **Coaching/mentoring** | • EEN (KAM/EIMC),<br>• Start-up Week-end,<br>• RECVL Bootcamp<br>• private consultancy |
| | **Pre-commercial procurement** | • No |
| | **Large-scale demonstrators** | • No<br>• ARD PIVOTS platform? |
| ***Supporting social innovation*** | **Incubator** | • Alter'incub<br>• Nekoe : User-driven innovation |
| ***Improving product/ service/process quality*** | **Coaching/mentoring** | • EEN (KAM/EIMC),<br>• private consultancy |
| | **Vouchers** | • Innovation Diagnosis, (Bpifrance voucher), |
| | **Living labs** | • No |
| | **Design** | • Emergence Design + CAP AIR |
| ***Increasing export turnover*** | **Coaching/mentoring** | • EEN (KAM/EIMC),<br>• private consultancy |
| | **Export guarantee scheme** | • COFACE BpiFrance |
| | **Soft landing** | • CCI International |
| ***Access to external funding sources*** | **Investment readiness** | • Emergence Innovation I<br>• Loire Valley Invest, Business Angels<br>• Scalu'p (Dev'up) |
| | **Public financial engineering scheme** | • Region/BpiFrance convention |
| ***Supporting market diversification*** | **(Inter)cluster** | • Initiative by CVL Region and Dev'up on some specific topics |
| ***Hiring qualified staff*** | **Vocational training schemes** | • Continuing vocational training approach by the Region |
| | **Student and PhD placement** | • CIFRE (PhD in enterprise) |

| | | |
|---|---|---|
| ***Improving resource efficiency*** | **Coaching/mentoring** | • EEN (KAM/EIMC),<br>• private consultancy |
| ***Access to high value-added support services*** | **Vouchers** | • Innovation Diagnosis, (Bpifrance voucher),<br>• CAP (Regional Innovation aid), |
| | **Clusters** | • 4 +1 competitiveness clusters: Cosmetic Valley, Dream, Elastopôle, S2E2, Vegepolys Valley<br>• 6 business clusters: Aérocentre, Polepharma; Nekoé; AREA and Food Val de Loire, Lahitolle, GEAR, Shop Expert Valley |
| | **Business support organisations** | • Dev'up,<br>• CCIs<br>• Craft Chambers<br>• Young Economic Chamber<br>• Social Economy Chambers<br>• employers' union<br>• Trade unions and branches |
| ***Enhancing growth*** | **Coaching/mentoring** | • EEN (KAM/EIMC),<br>• Regional Accelerator (CVL Region-Bpifrance)<br>• Scale'up (Dev'up) on access to finance<br>• private consultancy |
| | **Financial engineering** | • Scale'up (Dev'up) on access to finance |
| ***Enhancing innovation management*** | **Mentoring / coaching** | • EEN (KAM/EIMC),<br>• private consultancy |
| | **Vouchers** | • CAP AIR |
| ***Increasing the number of SMEs engaged in cooperation*** | **Clusters** | • 4 +1 competitiveness clusters: Cosmetic Valley, Dream, Elastopôle, S2E2, Vegepolys Valley<br>• 6 business clusters: Aérocentre, Polepharma; Nekoé; AREA and Food Val de Loire, Lahitolle, GEAR, Shop Expert Valley |
| | **Vouchers** | • Region aids,<br>• Bpifrance ids |
| | **Meet the buyer** | • Dev'up, (EEN and Export)<br>• CCIR (EEN) |
| | **Matchmaking** | • EEN,<br>• RDECVL |

Map of the offer of support services showing the coverage of the entire life cycle of an enterprise (value chain):

| Type of support | Pre-start up | Startup | First step | Growth |
|---|---|---|---|---|
| ***Financial*** | • Micro-credit (plateforme initiative local)<br>• Proof of concept<br>• Spin-off funding<br>• Reward crowdfunding<br>• Accelerator finance | • Grants<br>• Public seed funds<br>• Guarantees<br>• Reimbursable advances<br>• Loans<br>• Crowdfunding loans/ equity<br>• Business angels<br>• Seed/early stage funding<br>• Corporate venturing | • Public venture capital<br>• Private venture capital<br>• Leasing | • Public investment banks<br>• Equity funds<br>• IPO<br>• Mezzanine |
| ***Soft measure*** | • Awareness support<br>• Business plan competition<br>• Enterpreneurship coaching<br>• R&D+I grants<br>• IPR management<br>• Business plan evaluation<br>• Market research<br>• Investment readiness | • Incubation<br>• Coaching/mentoring<br>• Clustering<br>• Innovation management<br>• First client search<br>• Collaboration between enterprises and R&D+I institutions | • Market intelligence<br>• Internationalisation | • Geographical and sectorial diversification<br>• Innovation management |
| ***Real estate*** | • Co-working space<br>• Pre-incubators<br>• Accelerators | • Incubator | • Science parks | • Soft landing offices (pepinnières)<br>• Industrial parks |
| ***Equipment*** | • University/public research institutions' labs<br>• Prototyping facilities | • Technology center<br>• Democenter (CETIM) | • Technology lab<br>• Living labs | • Open technology platform<br>• |

## 3.4. Budget

The financial resources planned for the implementation of S3 for the period 2014-2020 will reach over 1.3B€, comprised of 40% private funding and 60% public funding (31% national; 17% regional; 10% EU;

2% local). The constructive collaboration between national and regional authorities have facilitated that several "DPS-focused" regional interventions match with national interventions. As an example, national funds support larger infrastructure and equipment while regional funds are targeting innovation projects; national funding targets upward-TRL and regional money downward-TRL. More than half of this funding (56%) is expected to go directly to the "vertical" priorities (DPS).

From its side, the ERDF financial allocation of Centre-Val de Loire to Axis 1 – A job-creating knowledge-based society – has been primarily concentrated in 'Public Research' (16.5 M€), 'Technology Transfer and Cooperation between the University and local SMEs' (16,5 M€), 'Clusters and SMEs' (5.2 M€), 'Direct support to SMEs' (6 M€) and 'Entrepreneurship and Spin-offs' (5.8 M€).

## 3.5. Governance

The governance of the first Regional Innovation Strategy was introduced in 2010, which was later modified to broaden the new S3 governance spectrum and step up the endeavours and cooperation efforts of the regional stakeholders.

The governance system includes the following main bodies and processes:

- Regional Strategic Committee for Innovation: that steers and validates the modifications likely to occur in the selected Potential Specialisation Domains
- Operational Committee for Innovation: responsible for ensuring that the implementation of the strategy is consistent with the objectives of S3
- Consensus-building process: involving working groups, the 'Territorial Intelligence Unit' and the 'Thematic Task-force'
- Innovation Conference, especially dedicated to the Potential Specialisation Domains (DPS/ RIS3 priorities) with the aim of encouraging the emergence of innovation and research projects
- Follow-up and monitoring of the strategy to verify whether or not the expected results are being achieved.

Former ARITT particularly focused efforts on the participation and engagement of SMEs that are major pillars of the S3, especially with the purpose to develop an Entrepreneurial Discovery Process. As a consequence, in the first steps of S3, the Region chose a governance system mostly SMEs-oriented. Nevertheless, the Region also offered the university and the public research sectors to actively participate in transversal measures.

In 2014, the Region has made the choice not to establish new structures to manage each DPS. Each DPS is steered by a team made of an industrialist (pilot role) and a figure from public research (co-pilot).

There is no funding for, and no institutionalization of that function. The approach is pragmatic and essentially based on the legitimacy and capacities of individuals to play the role of facilitator of new relationships, and to act as a driving force for the definition of new innovation agenda thanks to mobilization of the best expertise in the DPS. In some cases, this role is supported by clusters or competitiveness poles. In most DPS, the role coincides with the responsibility for the relevant ARD programme. Although this strategy may involve some risks of discontinuity or lack of resources for this animation function, it was highly relevant in the context of a French region characterized by a proliferation of intermediary structures.

However, this mode of governance was not based on a dedicated animation of the ecosystem. It was decided to revise this approach at the CSRI on 18 December 2018.

## 3.6. Monitoring, assessment, evaluation

As the RIS3 of the Centre-Val de Loire is considered to be an "umbrella" strategy for all other innovation policies in the region, its monitoring is decoupled from the other policy instruments which have their own monitoring and evaluation logic.

### RIS3 Monitoring and Evaluation strategy

**Since the creation of its RIS3, the Centre-Val de Loir region has been committed to monitoring and evaluating its strategy in order to take into account the evolution of its ecosystems, technologies and markets concerned by its priorities.**

Moreover, the RIS3 document includes a set of proposed indicators for both horizontal and vertical measures (RIS3 priorities). The territorial strategic intelligence unit of Dev'up is responsible for the monitoring of the RIS3 implementation.

This monitoring dynamic was strong in the first two years of the strategy, during which the horizontal action pilots reported to the Regional Strategic Innovation Committee on the progress of their measures on a regular basis. Similarly, the RIS3 priority pilots and co-pilots, assisted in their task by ARITT, were asked to come forward the Regional Innovation Steering Committee to present the projects conducted in their Potential Specialisation Area, and give their feedback on the domain development and evolution. Their initial recommendations were updated in light of the innovation and R&D projects funded and of the evolution of the scientific, technical, economic and social context.

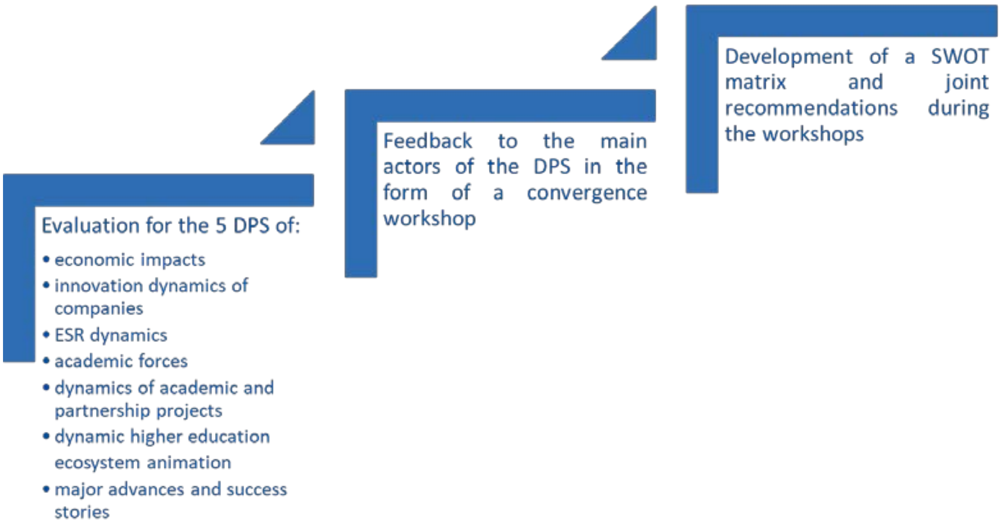
This created an opportunity for discussion among the committee members who concluded that it was worthwhile to address a potential new priority.

A year later, it was therefore decided to combine the mid-term evaluation of RIS3 with the characterization study of a potential new priority for RIS3.

The main aims of this study were:

- Update data on the 5 Domains of the RIS3 to measure changes
    - Update the data collected during the preparation of S3, in particular those concerning companies (turnover, number of employees, number of companies per field).
    - Complete the data to establish a dashboard that can be regularly monitored at the regional level (indicators, data, scope and definition, sources).
    - Take into account data not available regularly or no longer available, propose other sources in an evaluative logic.
- Characterize a potential 6th domain according to the same methodology
    - Follow the same approach as for the 5 initial domains
    - For economic data, define the value chain(s) with the regional stakeholders (Elastopole, CCI, AeroCentre and Dev'UP) before operating the databases

Thus, the same methodology has been carried out for the 5 initial RIS3 priorities:




As mentioned before, as part of the mid-term evaluation, we assessed:

- The growth of the companies within each RIS3 priority with some economic indicators (turnover, the evolution of the staffs)
- The development of the academic capacities (especially those linked to the company's needs)
- The coordination of the RIS3 priority.

We also gather the numbers of the innovative projects funded at the regional, national and international level, the number of the thesis (and particularly the thesis done in companies).

Above, all, through the consultation of the mains actors in each RIS3 priorities, we collected qualitative data and their feedback on the development of the RIS3 priority. By doing that, we were able to exchanges the information and compare their point of views.

**As showed in the above figure, the key actors of each RIS3 priority as well as those concerned by the potential new one, were involved in the mid-term evaluation process. The EDP was used during the monitoring and then during the mid-term evaluation of the RIS3 by a close involvement of the Q3 helix actors in this process. Through the EDP, a cluster called the Steering committee of the RIS3 for adding a new RIS3 priority to the strategy. As well, the using of EDP during the mid-term evaluation of the RIS3 enabled to determine the necessity to change significantly the parameter of some priorities as well as to split one, in order to improve the management and thus the efficiency of the support provided within the corresponding priorities.**

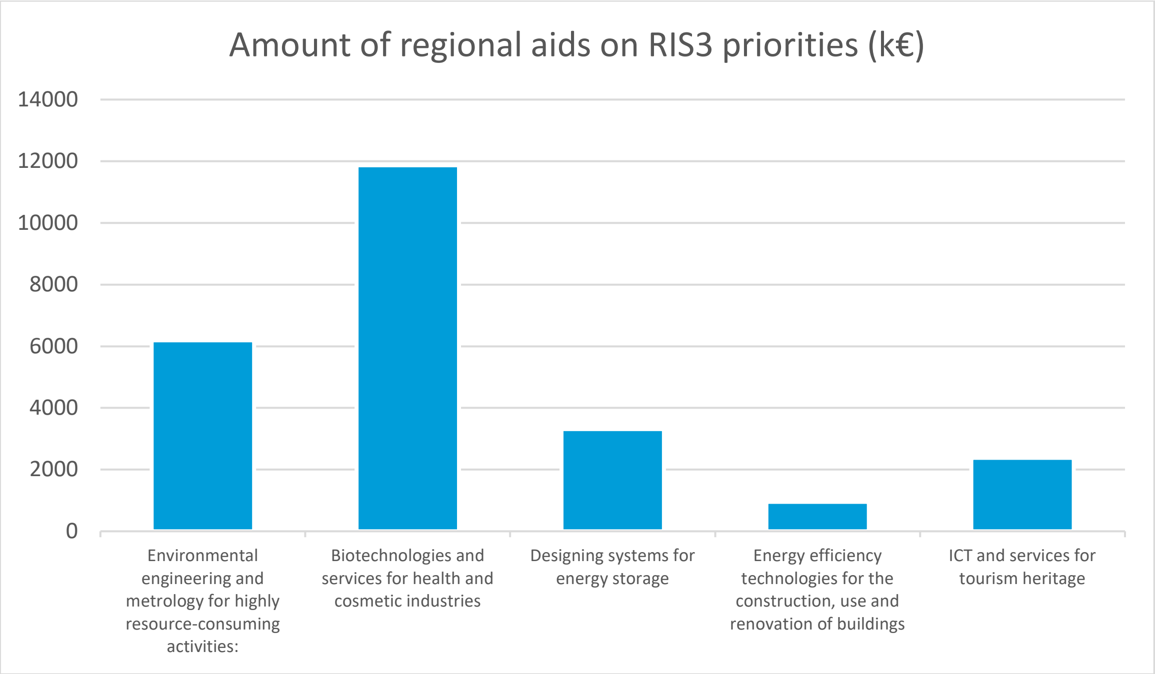
S3 and EDP generated behavioural changes for the actors in the ecosystem:

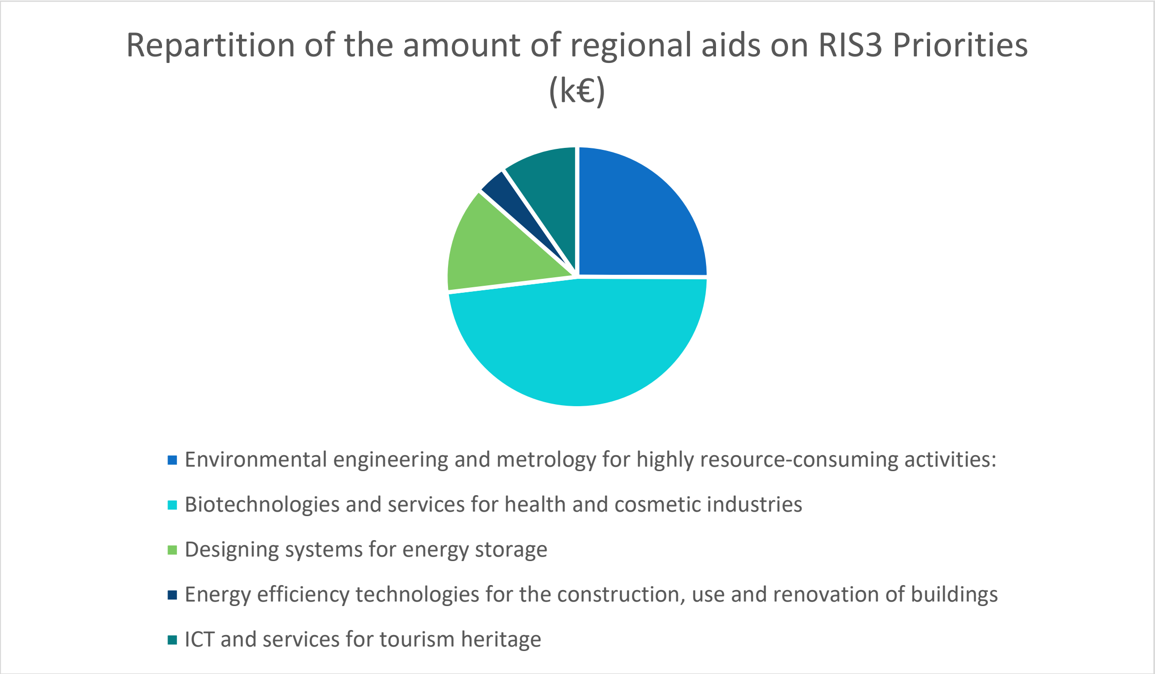
- Public research actors have been mobilized through the new regional ARD programmes: to be eligible the strong demand for economic and social impacts had to be met and this has changed the incentives for these actors and **built their capacity to develop impact-oriented projects with better integration of users and users' needs**.
- **Regional authorities think more strategically. S3 is influencing regional policies across domains (e.g. some innovation projects are also funded under the "energy" theme; the concept has been used in agricultural policy).** There is also a much better integration between line departments and European Affairs department (in charge of ESIF). **The regional agency has gained capacity and credibility, which eases its work geared towards the stimulation of ecosystem interactions.**
- **More interactions between stakeholders have been stimulated** and the funding streams are oriented towards the stimulation of these interactions. **There is a significant rise in applications for regional innovation projects, new partnerships are being created**.

The Centre-Val de Loire region has financed innovative projects in local companies to increase competitiveness and generate employments, as part of the framework Agreement to support R&I Sectorial Projects. It includes two sections:

- Research and Development Section, which promotes R&D departments in local companies to support processes and organisational innovation in industry, business-to-business service, tourism or agro-food and agro-transformation.
- Innovation Section, which promotes innovative products and processes in the above-mentioned sectors.

**Since 2014 some 48% of the RDI grants and measures financed by the Regional Council can be attributed to the 5 DPS** (see table below source Dev'Up Centre Val de Loire 18/12/2018).




Overall, the monitoring of the projects financed by the Region shows that it is the DPS "Environmental engineering and metrology for activities that consume large quantities of natural resources" and "Biotechnologies and services applied to health and cosmetics" which attract the most funding for innovation and research.

**The first observation is that the Region has gone beyond the forecasts by increasing more than 60% of its interventions on projects relaying DPS against 55% envisaged.**

## ERDF OP Monitoring and Evaluation strategy

The Annual Implementation Report (RAMO) presents the state of progress of programming - consumption of the financial envelope, situation and analysis of the indicators and objectives set, implementation difficulties encountered and measures taken to remedy them.

Each year the Centre-Val de Loire Region and the Managing Authority shall draw up this report and send it to the European Commission in the middle of the following year.

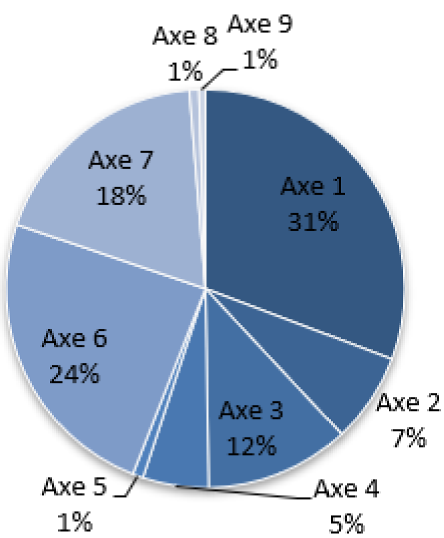
The Citizens' Summary is a document intended for the general public, summarising a large amount of information contained in this RAMO and highlighting a few projects. Thus, beyond the monitoring committees open to the key actors of the ecosystem, the monitoring of the implementation of the ERDF OP is shared via the web with the general public.

As of 31 December 2018, a total of 104 operations have been programmed under Axis 1 of the ERDF OP, mobilising €42.8 million from the ERDF. The average financing rate is 42.6% of eligible costs. This represents a budget consumption rate of 76.3%, bearing in mind that the mid-term evaluation of the ERDF has made it possible to increase the budget allocated to Axis 1.

During 2018, 32 new operations have been programmed and €13.8 million from the ERDF have been committed,

Thanks to the ERDF: 389 companies have received support (advice, grants, etc.) to deploy their research efforts.

**BREAKDOWN BY AXIS OF THE EUROPEAN FUNDS ALLOCATED UNDER THE OP AT 31/12/2019**



## 4. SWOT analysis of the policy mix

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### Strengths

- A strong private research potential (6th in national BERD)
- A real dialogue between the state services and the Region
- A well-structured innovation support network (RICVL): 100 members in contact with the companies. Extension of this network to economic development (RDECVL): 400 members in contacts with the companies)
- A well-structured innovation support process: companies and project diagnoses, proposal of a dedicated and individual innovation patch to the companies, monitoring of the progress of the path among the ecosystem stakeholders, signposting and matchmaking…
- More than 2000 companies supported each year by the ecosystem
- A strong political commitment:
    - to put innovation at the heart of the policy mix and to allocate the appropriate means (ex: RIS3, ARD)
    - to strengthen openness to Europe to better seize opportunities (Europe Strategy for the RCVL Region 2017-2020)

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### Weakness

- Industrial fabric moderately intense technologically (automotive, mechanical, chemical pharmacy, agro food)
- Lack of capacity in the majority of SMEs to develop and implement innovative projects
- The lack of significant synergies between private research and public research
- A process for research valorization that is still poorly structured and visible despite the launch of a new experimental organization for incubation, technological transfert of R&D (C-Valo)
- A lack of clear identification of the region on a technological and / or scientific topic
- A big gap between the education and local business needs

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### Opportunities

- Merge of the regional innovation agency (ARITT) and the economic development agency (Centreco) to build a powerful agency (Dev'up) in order to sustain the company's development: critical mass on the ground and coordination on the whole ecosystem
- Due to the new territorial organisation (NOTRe Law), there is now a continuum between the regional level (Region and Dev'up) and the local level (federation of municipalities and Chamber of Commerce and Industry) for supporting the companies in their development.
- New needs coming from the municipalities concerning the support of SMEs in their territories : need of adaptation and revision of the proposed tools
- Need of the professionalization of the ecosystem (in particular new members) : creation of the University of the Economics developers

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### Threats

- Many regional industrial establishments depend on innovation centres in the Ile-de-France region.
- The attractiveness of the Ile de France for students, researchers and companies
- Allowing profitability in the most mature sectors, hampering the capacity for innovation
- Lack of attractiveness of technical profiles in the businesses for certain geographical areas
- Management and control on innovations projects is a bureaucratic process

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## 5. Main conclusions and areas of improvement

### Revisited Boston Consulting Matrix applied to the policy mix

We decided to apply the Boston Consulting Group's Matrix to RIS3 and Axis 1 of the ERDF OP to express the main challenges of RDI support in our region.

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Most successful tools or most appreciated aims

- **Coordination of the ecosystem through the economic developer network** -> need to be readjusted due to the large size of the network (400 members with heterogeneous job, profile and interest)
- **Structuration of the process of innovation support** -> need to be restructured and more promoted due to the apparition of new policy instrument (Industry of the Future Initiative) and due to a high turnover in the economic developer network which implies a loss of knowledge on the innovation process and the associated resources

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Dilemmas: activities/aims to kill o to offer

- **Way to support start-ups** (beyond the myths).

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New promising activities/tools

- University of the Economics developers
- Internationalisation and Europe Cooperation

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Old or less demanded or low results activities/ tools

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This table will be completed at the end of the peer-review thanks to the discussions with the project partners and the recommendations made.