

Regional Innovation Strategy towards Smart Specialisation (RIS3) 2021-2027



# Introduction

The Regional Innovation Strategy towards Smart Specialisation's (RIS3) approach forms a cornerstone of the European Union's regional innovation policy since 2014. It is designed to meet the strategic objective "A smarter Europe" of the European Commission's new cohesion policy 2021-2027. It encourages the selection of specific technological fields or sectors, on which to prioritise and concentrate investments, in order to optimise the economic benefits and impacts. It is not simply about reinforcing existing strong sectors present in the region, but rather about facilitating the emergence of strategic regional sectors based on the latest market and technological trends and driving cross sectoral cooperation in order to position the territory on emerging industrial value chains in which the region has differentiation assets.

In addition, RIS3 should enable French Regions to achieve a shared innovation strategy that responds to the region's economic, environmental, and societal challenges. The challenges identified in the RIS3 2021-2027 are to support innovation in favour of employment and support the necessary energy and ecological transitions, as well as to strengthen the attractiveness of the region by supporting areas of excellence.

The Region's objectives are to:

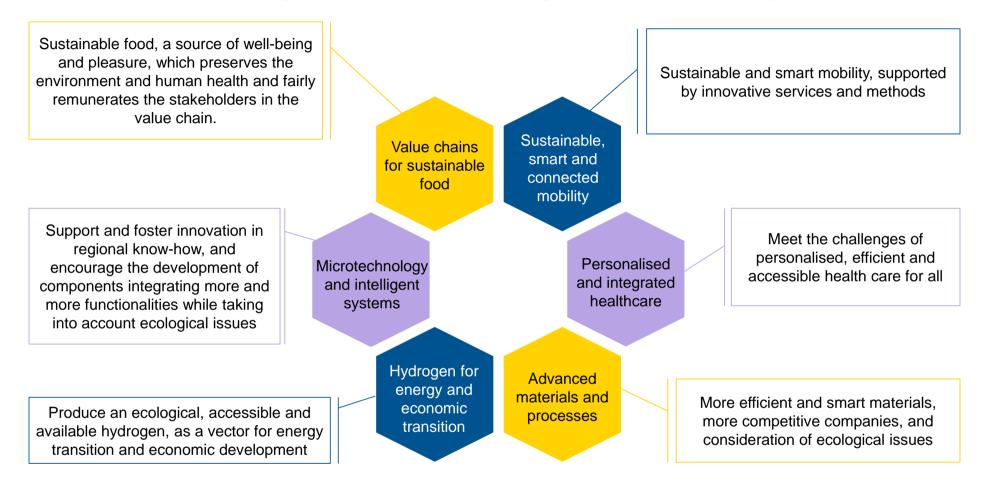
- strengthen the innovation support service for the entire regional economic network, in particular SMEs.
- Enhance partnerships in the region between public research actors for the development of innovation in companies.
- Develop the unique and "differentiating" assets in the region, by supporting the areas of regional specialisation; and to encourage the emergence of new ones, by working at the crossroads of sector strengths selected by the Region.

The development of the RIS3 is based on a participatory process of entrepreneurial discovery (EDP), which includes all research and technology transfer actors, companies, economic and innovation intermediaries, and public institutions This process has made it possible to identify and reach a consensus on regional priorities, and in particular, to identify **6 new strategic sectors, called Strategic Domains (SD)**, based on the skills and know-how that are present in the region. This process is intended to be sustained over time to allow for the evolution of the RIS3 and the SD during the 2021-2027 period and to ensure the territory can seize new opportunities.

Each of these 6 SDs are further divided into **prioritised and differentiated work streams**. They have been developed on the basis of :

- regional strengths in terms of research and business/entrepreneurial skills,
- ability to respond to market expectations and to major environmental and societal issues, as well as to local expectations, and
- potential for innovation.

# The 6 Strategic Domains (SD) of the Bourgogne-Franche-Comté Region:



# The Strategic Domains of specialisation

#### 1. Value chains for sustainable food

With a dynamic agriculture and food industry that is concerned both with protecting the environment and the health of its citizens, the BFC Region has chosen to specialise on sustainable food. It is based on **4 elements**:



The regional ambition is to support the entire food value chain around the concept of sustainable food, a source of well-being and pleasure, which preserves the environment and human health and ensures a fair remuneration for the stakeholders within in the value chain.

This SD is based more particularly on **4 differentiating factors**:



Develop new solutions to reduce the use of synthetic inputs

#### Key objectives:

- Support the development of new concepts and demonstrators of technical solutions, thereby reducing synthetic inputs to facilitate the agro-ecological transition.
- Support the development of alternative techniques for the protection of livestock health.
- Develop innovative and acceptable economic models to promote the dissemination of these new solutions.

#### Keywords:

Soil, Plant and Animal Health, Agricultural Robotics and Imaging, Biostimulants, Other Natural Techniques, Varietal and Animal Selection.



Offer all consumers a healthy diet based on production methods that preserve the nutritional and taste quality of the products.

#### Key objectives:

- Enhance the value of production and processing methods in food, which allow to obtain quality raw materials and satisfy the consumers' taste
- Use the ferments and micro-organisms of interest in the processing of agricultural products and food.
- Develop leguminous plants at all levels of the value chain.
- Improve the traceability of products.

#### Keywords:

Natural ingredients, Food and beverages from the use of ferments, Leguminous plants, Organic food, Traceability, Product quality, Taste physiology, Food behaviour, Food preferences.



Design local and sustainable food chains to serve territories and sectors (existing and emerging).

#### Key objectives:

- Support stakeholders in rural, peri-urban and urban areas in food transitions that favour local supply chains with a low carbon footprint.
- Design new services and processing methods adapted to the needs of professionals and consumers.
- Demonstrate the feasibility of innovations: carry out demonstration projects for sustainable and local food production systems.

#### Keywords:

Sustainable agri-food systems, Territory, Local food chains.



Co-innovate to meet consumer needs

#### Key objectives:

 Support co-designed projects with consumers to better meet their expectations in terms of food quality, diet and making people's lives easier

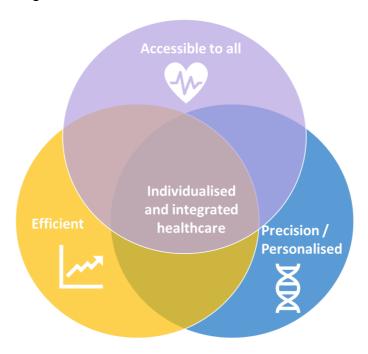
This element can serve as a cross-cutting theme for the three previous ones.

#### Keywords:

Personalised nutrition, Diet, Competitive differentiation, Healthy eating.

# 2. Personalised and integrated healthcare

Health is a key regional field with nearly 350 companies, 10,000 direct jobs and a consolidated annual turnover of €2 billion. The BFC Region has chosen to focus its innovation strategy on three major health issues, in line with the assets and specificities of the region:



The regional ambition is therefore to support innovation for "Personalised and integrated healthcare" to meet the challenges of efficient and accessible healthcare for all.

This SD is based more particularly on **3 differentiating factors**:



Advanced Therapy Medicines, Innovative Pharmaceutical Processes and Theragnostics

#### Key objectives:

- Develop new personalised therapeutic approaches using innovative therapy medicines (ITM) and therapnostic.
- Improve the production processes of chemical and biological drugs through the optimisation and development of innovative pharmaceutical processes.

#### Keywords:

Biological drugs (complex or recombinant proteins), Cell engineering, Cellular engineering, Gene therapy, Cellular therapy, Bio-production processes, Pharmaceutical powders, Biomarkers, Pharmaco-imaging, Vector radiotherapy



Innovative medical and bio-analytical technologies

#### Key objectives:

- Design and manufacture innovative medical technologies (devices or instruments intended for clinical use) to improve and personalise the treatment pathway (prevention, diagnosis, treatment, rehabilitation).
- Design innovative bio-analytical technologies to support the development of new health products (in connection with the sustainable food SD).
- Develop technologies associated with the analysis of sequencing data by bioinformatics.

#### Keywords:

Medical Device (MD), Instrumentation, Miniaturisation, Virtual and Augmented Reality, Medical Robotics, Al, Bio-analytics, Bio-sequencing, Bio-informatics



Techno Therapies, ehealth and digitalisation of treatment pathways

#### Key objectives:

- Develop new solutions for prevention, physical and cognitive rehabilitation, and re-education at the crossroads of know-how, technologies and sciences: engineering (e.g., equipment), digital (e.g. virtual reality), cognitive sciences and health.
- Create innovative treatment pathways: decompartmentalised, digitised, personalised and accessible to all.

#### Keywords:

Readaptation, Rehabilitation, Appliances, Telemedicine, Virtual reality, Connected objects, Al, Intelligent microsystems, Cognitive sciences, Cobotics/Robotics, Sport, Autonomy

# 3. Sustainable, intelligent, and connected mobility: innovative vehicles, infrastructures, and services

The automobile industry and the transport equipment sector are key economic sectors within the regional economy. Innovation in the field of mobility in the broadest sense has long been a characteristic of the region, thanks to the presence of leading French players of the automotive industry, and global centres of excellence of industrial players. Cars, lorries, trailers, port and airport trailers, rubbish skips and sweepers, motorised 2-wheelers or scooters, are all mobility solutions on which Bourgogne-Franche-Comté is constantly innovating. Today, solutions are shifting towards connected and/or autonomous vehicles, electric and hydrogen, as well as new methods and optimised solutions for the production, maintenance, and repair of vehicles. The development of these new products, services, processes, applications, and technologies around mobility is based on three major challenges:



The regional ambition is therefore to support innovation to develop sustainable, smart and connected mobility solutions: in terms of vehicles, infrastructures and the development of innovative services.

This SD is based more particularly on **four differentiating factors**:



Design and manufacture the components of the value chain related to the electrification of vehicles

#### Key objectives:

- Capitalise on the many existing players and support their development to capture the strong growth in alternative motorisation solutions for vehicles.
- Imagine new architectures for the vehicle drive and refuelling chain.

#### Keywords:

Engine, drive chain, architecture, compactness, performance, thermal management, electronic systems, refuelling, electric, hybrid



Create highperformance and reliable electrical energy storage solutions

#### Key objectives:

- Create high-performance and efficient energy storage solutions for batteries (and its components): optimisation linked to hybridisation, power, life cycle, integration in vehicles.
- Explore other energy storage solutions: energy storage by flywheel.

#### Keywords:

Storage, battery, components, supercapacitors, inertial storage



Design and manufacture connected and smart vehicles, machines and solutions: technological building blocks and operational implementation

#### Key objectives:

- Support the design and manufacture of connected and intelligent machines, vehicles, and infrastructures, covering a broad spectrum: terrestrial and flying vehicles, robotised logistic machines, industrial maintenance, electric and hybrid.
- Support the development of technological building blocks essential to connected solutions: communication from the vehicle to the outside, geolocation and location in space, vehicle integration and system security, etc.

#### Keywords:

Connectivity, automation, geolocation, intelligence, autonomous, machines and vehicles, rolling and flying, logistics and robotised maintenance, infrastructures



Deploy innovative services around mobility for people, equipment and infrastructures

#### Key objectives:

- Deploy professional services (B2B) around the mobility of people and goods, for industrial and logistics applications.
- Strengthen and optimise processes and services for the maintenance of equipment and infrastructures.
- Invent tailored service mobility solutions, particularly in low-density rural environments.

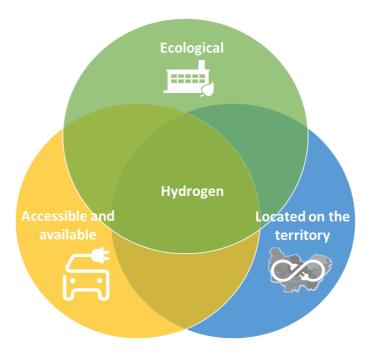
#### Keywords:

Data by and for mobility, service mobility, new uses, flow management, planning, security, connected and localised systems, multimodal system modelling, ticketing, parking, optimisation of maintenance processes, etc.

# 4. Hydrogen for energy and economic transition: value chain and market uses

Hydrogen has been identified as a market of the future for Bourgogne-Franche-Comté for several years and is the subject of significant regional support. Since 2016, some 12M€ have been invested in research and collaborative projects, notably as part of the ENRgHy meta-project, winner of the "Territoire Hydrogène" label. In addition, 90M€ will be invested over the 2020-2030 period as part of the Bourgogne-Franche-Comté region's "Hydrogen" roadmap.

The regional hydrogen development strategy aims to meet three challenges:



The regional ambition consists in producing and deploying the uses of an ecological, accessible and available hydrogen supply, localised within the regional territory, as a driver of energy transition and economic development.

This SD is based more particularly on **four differentiating factors**:



Innovate in hydrogen production, storage and distribution

#### Key objectives:

 Support innovations in the field of production, transport, storage and use of hydrogen, produced from green, or in some cases low carbon energy sources, likely to obtain a Guarantee of Origin (GO) established within the framework of the European CERTIFHY standard.

#### Keywords:

Production, Storage, Transport and distribution, Green energies, Low carbon energies (co-products, waste), Fuel cell system, Reservoirs, Components, Infrastructures, Fatal hydrogen, Local production



#### Develop mobile uses

#### Key objectives:

- Support the design and production of hydrogen mobility solutions for all types of vehicles, engines and equipment.
- Support the deployment of hydrogen for mobility use in the region through the development of new technological solutions, and the massification, experimentation and demonstration of hydrogen technology for mobility.

#### Keywords:

Hydrogen propulsion, fuel cell, hydrogen vehicle, hydrogen stations, massification, experimentation, captive fleet



# Develop stationary and microgrids uses

#### Key objectives:

- Support the initiation and development of stationary uses of hydrogen and enable the development of demonstrators in the regions.
- Develop hydrogen energy management technologies and solutions (storage, conversion, etc.) for buildings or districts.

#### Keywords:

Stationary Hydrogen Energy, Building, Energy Management, Microgrids, Modelling, Complex Systems Control



# Industrial applications

#### Objectives:

- Support the development of the industrial use of green hydrogen, especially in industries that are strong in the region and large users of hydrogen as a raw material, such as the production of metals and certain materials (e.g., glass), or the food industry.
- Develop projects and solutions to manufacture synthetic methane for other uses.

#### Keywords:

Industrial Green Hydrogen, Materials Development, CO2 Capture, Synthetic Methane

# 5. Advanced materials and processes

Bourgogne-France-Comté can rely on a competent and dynamic ecosystem to support the development of advanced materials and processes, from research to market launch to product end-of-life and recycling. The innovation performance is mainly driven by SMEs that have essential skills in the field of materials such as mechanics/metallurgy, chemicals/plastics, wood, and bio-sourced materials, etc. In addition, the region has many players in the materials' end user sectors (automotive, health, nuclear, etc.) which result in a strong demand for innovation and the performance of materials. These sectors are marked by the presence in the region of many major end user groups (PSA, Orano, Plastic Omnium, etc.).

The Region has chosen to focus its strategy on three major issues in advanced materials and processes:



The regional ambition is to stimulate and support innovation in regional knowhow related to materials to maximise the value chain present in the region, from design to recycling.

This SD is based more particularly on three differentiating factors:



Develop sustainable materials and thinking about the life cycle of the product

#### Key objectives:

- Support the production and use of sustainable and recycled materials that meet strong innovation challenges for multi-sector applications (mobility, energy/nuclear, building, clothing, etc.).
- Think and reduce the impact of materials on the environment and health.

#### Keywords:

Eco-design, reuse and recovery of materials, low carbon impact, repairability, etc.



Develop new materials: new alloys, smart materials and bio-sourced materials.

#### Key objectives:

Develop new materials that meet the needs of the market: ecoresponsible (production processes, life cycle), high-performance, intelligent, etc. The technical nature of these new materials will be key for many application sectors in the region: automotive, aeronautics, wind energy, etc.

#### Keywords:

Hybrid materials, polymers, bio-sourced materials, metamaterials, smart materials, functionality, new alloys, bio-sourced materials, etc.



Develop
characterisation/modelling
methodologies and
advanced manufacturing
and control processes
that control environmental
impact and sustainable
management of resources.

### Key objectives:

- Develop advanced manufacturing and control processes ensuring energy savings / eco-efficiency. Integrate digital technologies throughout the materials value chain to meet the increasingly complex specifications of the market.
- Think and reduce the impact of materials manufacturing processes on human health and the environment.

#### Keywords:

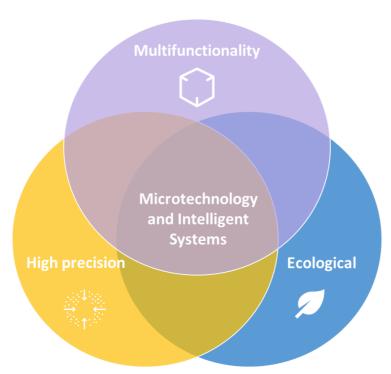
Digital modelling, additive manufacturing, 3/4D printing, powder metallurgy, high quality, advanced processes, process instrumentation, very high precision machining, etc.

### 6. Microtechnology and intelligent systems

Microtechniques refers to all the techniques that contribute to the design, functionalisation, manufacture, and handling of small and/or high-precision objects. The scale of microtechniques starts at the micrometre (i.e., 10<sup>-6</sup> metres) and ends at the millimetre.

This historic industrial sector of Bourgogne-France-Comté consists of more than 600 companies and accounts for some 14,000 jobs. As the cradle of watchmaking and eyewear, the former Franche-Comté region has made miniaturisation and precision its speciality. Franche-Comté has been able to develop its know-how and broaden its applications to cover microtechniques. Today, the regional territory, now Bourgogne-Franche-Comté, enriched by the precision mechanical skills of the former Bourgogne region, represents a unique concentration of know-how and excellence. The regional dynamic is mainly based on regional SMEs and micro-businesses. Their main outlets are the luxury, aeronautics, health, and automotive sectors. The main market leaders of these sectors, although not present on the territory, all come here to do their business and component sourcing.

The region has chosen to focus its innovation strategy on three major challenges in microtechnology:



The regional ambition is therefore to support and encourage innovation in microtechnology and in the design and manufacture of components integrating more and more functionalities within increasingly miniaturised components.

This SD is based more particularly on three differentiating factors:



Develop, improve and hybridise micromanufacturing processes.

#### Key objectives:

 Promote the development of microtechnologies and processes aimed at the manufacturing and testing of very small components for markets characterised by their requirements in terms of quality and performance.

#### Keywords:

Micro-machining, micro-moulding, micro-injection, additive manufacturing, micro techniques, micro-robotics, clean room micro-manufacturing, surface treatments, adaptive control and AI for simulation and optimisation



Develop systems and components integrating more and more functionalities (optics-photonics, acoustics, electronics, etc.).

#### Key objectives:

- Promote the development of sensors, actuators and components integrating more and more functionalities in increasingly smaller spaces, as well as microsystems, for numerous applications of a strategic nature.
- Combined with electronics, optical-photonic and communicating technologies (IoT network, RFID, etc.) are essential for processing data from a large number of sensors.

#### Keywords:

Optics-photonics, electronics, on-board AI, time-frequency, data-based AI, MEMS, sensors, ...



Develop the uses of microtechnologies and systems to improve the performance of the "industry of the future".

#### Key objectives:

 Develop new digital design technologies and advanced manufacturing processes integrating 4.0 technologies throughout the materials value chain to meet increasingly complex market specifications.

#### Keywords:

Industry 4.0, digital modelling, 3/4D printing, high quality, advanced processes, model-based AI, etc.

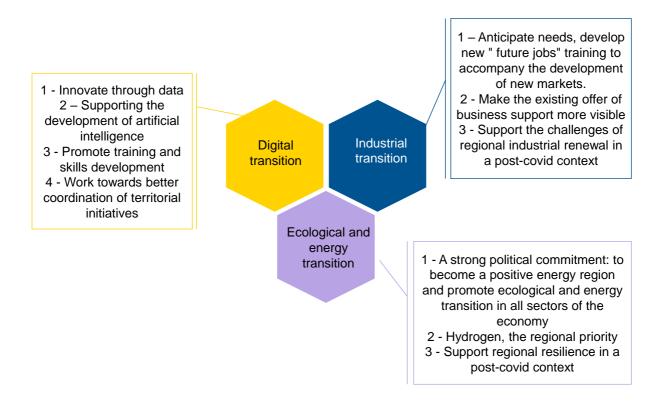
# Digital, industrial and Green transition: cross-cutting issues to be addressed

The Region has been committed for many years to managing the digital, industrial, and ecological transitions that it faces. Through the RIS3, the Region reaffirms its ambition to take up these cross-cutting challenges in the context of a health pandemic which has only served to confirm the need for these changes and the need to make economies more resilient to such challenges.

The challenge is as much about the technological dimension as it is about the support and skills development offer of regional players. In this respect, the territories are key players in the promotion and enhancement of new practices in a logic of places of experimentation (example: initiatives funded under the TIGA programme - territories of great innovation ambition).

These three cross cutting topics are at the heart of current trends and national and European strategies (Horizon Europe, Green Deal, Circular Economy, Industry 4.0, Digitalisation, etc.) and also represent major societal challenges.

They have been addressed together, as they feed into each other in a logical and virtuous circle, they interact with each of the regional SDs, and they can be considered as development levers for driving innovation and the development for each SD.



### I. The digital transition, a competitive lever for businesses

#### 1 - Innovate through data

The regional digital players demonstrate a very broad and heterogeneous level of maturity in terms of knowledge and use of data between laboratories, large companies, and VSE/SMEs in the regions. However, data represents an opportunity for driving innovation for all players, both private and public. Thus, awareness raising amongst all the stakeholders to the challenges of data is a major issue to promote innovation in the region.

#### 2 - Support the development of artificial intelligence (AI)

The stakes concerning the deployment of AI solutions are high in terms of jobs, attractiveness, and opportunities for companies across all sectors of activity. The objective is to promote the emergence of a dedicated ecosystem by encouraging and facilitating the emergence of business/research partnerships, experimentation, and training, and organising the companies working on AI, and improving the visibility of this ecosystem.

### 3 - Promote training and skills development

In a context of industrial and ecological transition, the upgrading of skills and digital training of regional players is necessary. This can be based on existing resources and developing territorial technological skills, particularly in the deployment of digital technology in companies and data management. The objective is to support all the players in the territory according to their level of digital maturity.

#### 4 - Work towards a better coordination of territorial initiatives

The service offer in terms of digitalisation support is presently fragmented between the different regional structures and programmes. This fragmentation is detrimental to the visibility of the service offer, and to the impact of the business support programmes, which do not always adequately point to the service, expertise, or solution most relevant to a business' needs. The structuring and strengthening of links between advisory structures is a major challenge to enhance the level of digital maturity and competitiveness of regional companies.

#### Regional initiative



The EDIH (European Digital Innovation Hub) project is the regional flagship initiative that aims to tackle this issue. Its ambition is to <u>support the digital transition of companies in the Bourgogne-France-Comté region</u>, with a view to improve competitiveness and facilitate ecological transition.

In particular, it will have a <u>strong structuring effect</u> on the regional innovation dynamic thanks to the cross-cutting nature of digital technology in all sectors of the economy.

#### II. Industrial transition

# <u>1 – Anticipate needs, develop new "future professions" training to support the development of new markets.</u>

Beyond a purely economic vision, a forward-looking dimension of vocational and continuous training seems necessary. An approach that would make it possible to improve existing regional competences, but also to reflect on the future competences needed could be envisaged.

#### 2 - Supporting the challenges of regional industrial recovery in a post-covid context

The BFC region similarly to France, which has lost 750,000 industrial jobs over the last 10 years, is facing a major deindustrialisation crisis with Like France, with the disappearance of a third of its industrial jobs since 2001. In addition, the economic crisis induced by the health crisis linked to Covid-19 is having an uneven impact on industrial sectors.

Calls to rebuild national and European economic sovereignty through the relocation of industrial production have multiplied since the beginning of the Covid-19 pandemic. Whilst there has been a consensus for some years now on the need to modernise industry, based on both the digital and ecological transition trends, this trajectory must be accelerated to ensure the greater resilience of territories.

In this context, encouraging the industrial transition processes will make it possible to influence the key levers of business competitiveness: cost and price control through advanced design and manufacturing processes; increasing the quality level and functionalisation of the products offered; taking into account sustainable development criteria, and thus improving the market positioning of the region's industrial sector.

# III. Ecological and energy transition

# 1 - A strong political commitment: to become a positive energy region and promote ecological and energy transition in all sectors of the economy

Energy transition is one of the main priorities of regional policy: regional actions focus in particular on the energy efficiency of buildings, the production of renewable energies (RE) and awareness raising and the mobilisation of citizens and territories alike.

Since 2017, the Region has developed its operational strategy for Ecological and Energy Transition (EET), which sets out the challenge of energy transition across all policy domains implemented by the Region. For example, the SRDEII's ambition is to make the EET a driving force for competitiveness, a source of opportunities with the development of new products, uses and processes. The targeted themes are:

- ✓ Eco-design, eco-innovation
- ✓ Support for the energy transition: actions on the industrial process
- ✓ Economy of functionality: questioning the economic model as a whole and thinking in terms of the use of the service
- ✓ Circular economy

The exchanges between the regional SD stakeholders and the relevant networks and intermediaries are sources of opportunities, development, and innovation for the years to come. It would seem essential to facilitate these exchanges within the SDs by proposing, for instance, more specific services and support actions to the various SDs to help them grasp these opportunities.

#### 2 - Hydrogen, a regional priority

For many years, regional players have been positioning themselves within the hydrogen sector value chain. A real synergy already exists between local authorities, researchers, and local industrialists. The ecosystem built here, between academic and economic players, makes Bourgogne-Franche-Comté a pioneer territory on the theme of hydrogen.

With its Hydrogen Territory label, Bourgogne-Franche-Comté is betting on combining economic development and energy transition. It has recently set up a Hydrogen Roadmap for the period 2019-2022. Between now and 2030, the Region plans to invest an additional €90m in support of the hydrogen sector, with the aim of encouraging the transition to green energy and the development of a new industrial specialisation that will create jobs.

#### 3 - Supporting regional resilience in a post-Covid pandemic context

The current health crisis suggests that it is likely that territories and companies need to plan to face similar and multiple crises in the future (environmental, energy, economic, social, food, health, etc.).

This situation and awareness has resulted in the key stakeholders reflecting on new ways to address the consequences of the current economic crises in the short term, but the region is also committed to understand the elements of sustainable

transformation of the economy and industry, as well as the challenges of employment, economic sovereignty and territorial resilience that are necessary in the medium term.

Potential measures include:

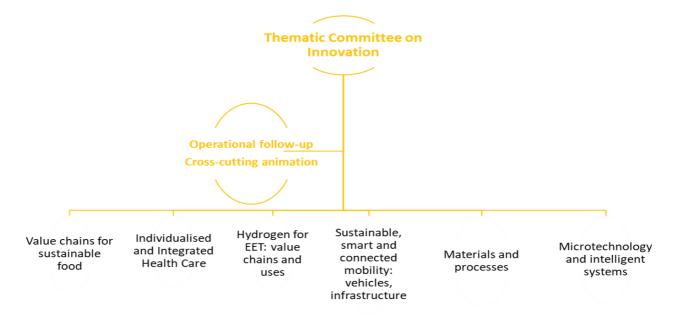
- ✓ New territorial development models
- ✓ Energy transition as a lever for recovery
- ✓ New ways of consuming and producing goods and services: circular economy, economy of functionality, local production, etc.
- ✓ Change in the business model of companies and start-ups
- ✓ Changes in work patterns: teleworking, development of shared workplaces, coworking centres;
- ✓ Etc.

These trends have existed for several years but they are now accelerating and are likely to become more and more prevalent.

# Governance

The Region of Bourgogne-Franche-Comté has chosen a clear, seamless, and inclusive governance for its RIS3 2021-2027. The Regional Council is responsible for the development, adoption, implementation, and monitoring of the RIS3. It does so in close consultation with all its public partners and key stakeholders from the innovation ecosystem.

The RIS3 is structured around three organisational elements:



# Monitoring and assessment

The monitoring and evaluation of the RIS3 will be designed and carried out in complementarity with other regional strategies including the Innovation-Business Action Plan, the Higher Education, Research, and Innovation Regional Strategy (SRESRI) and the European Regional Development Fund (ERDF) 2021-2027 Operational Programme (OP).

This mechanism will make it possible to:

- perform an assessment of the actions carried out,
- monitor and report on the developments observed over the 2021-2017 period and implement corrective measures if necessary, and
- improve the synergies between the regional innovation network and existing mechanisms.

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