Strategic Plan 2020-2024

JOINT RESEARCH CENTRE

Contents

INTRODUCTION

The strategic planning and programming (SPP) cycle[1] is the Commission's performance management framework. Its purpose is to help ensure that the Commission achieves its objectives in an efficient and effective manner. The strategy is expressed through Commission-wide general objectives, for which the Commission departments identify their contribution through multi-annual specific objectives. Impact indicators at EU level accompany the general objectives and result indicators accompany the specific objectives to allow performance to be tracked against set targets.

This **Strategic Plan 2020-2024 for the JRC** translates the political agenda of the von der Leyen Commission into research and management priorities. The **JRC contributes to all six priorities** of the von der Leyen Commission under the general objective 'A modern, high performing and sustainable European Commission'. In addition, the JRC's nuclear decommissioning and waste management programme contributes to the European Green Deal.

The JRC's contribution is focussed on two elements in the responsible Commissioners' mission letters: the European Union's world-leading science, research and innovation capacity can help finding European solutions to the most pressing global issues (Commissioner Gabriel), and the need to strengthen evidence-based policymaking and, with the help of strategic foresight, identify long-term trends on which the EU needs to act and about which we need to know more (Vice-President Šefčovič).

Thus, as the Commission's science and knowledge service, the JRC intends to play a significant role in **strengthening evidence-based policymaking and strategic foresight** through its research, knowledge management and foresight activities.

The JRC will make use of its already existing crisis-management tools and develop further short and long-term tailored solutions. It will ensure that compliance-critical functions, for both the management of its sites and for policymaking, will be maintained. This includes the EU response to the COVID-19 pandemic and the support to recovery policies.

Part 1 of this document outlines the JRC's research contribution to the political priorities of the von der Leyen Commission. Part 2 covers how the JRC is modernising the way it works, tackling human resources and financial management, as well as the digital transformation, collaborative working methods, information and data management and sound environmental management.

Given that the JRC's staff is financed directly from the following programmes (Horizon Europe, Euratom Research and Training Programme and the Nuclear Safety and Decommissioning Programme) under the Multi-annual Financial Framework (MFF), the

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[1] See '*Governance in the European Commission*' C(2018) 7703 final.

scope of the activities presented here is subject to the outcome of the negotiations for the MFF 2021-2027.

The Strategic Plan is accompanied each year by the Management Plan that focusses on the resources, activities and outputs planned for the coming year.

PART 1. Delivering on the Commission's priorities

A. Mission statement

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.

Independent from national or corporate interests, the JRC builds trust, from design and definition of policies to their implementation, monitoring and evaluation. Independence and impartiality are ingrained in its core values of integrity and ethics (in particular, scientific integrity)[2].

The JRC supports and brings together Commission services – often in close partnership with the Secretariat-General, or other transversal services such as the IDEA[3] or the Regulatory Scrutiny Board – to make sense of increasingly complex societal challenges. Together with policymakers, the JRC analyses knowledge needs, frames research questions and provides timely, tailor-made approaches and solutions. The JRC connects policymakers to the broad range of knowledge held by external stakeholders including academia, industry, civil society and individuals. This provides access to the full spectrum of perspectives needed to tackle the complex policy challenges.

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[2] JRC Strategy 2030
[3] Inspire, Debate, Engage and Accelerate Action (IDEA) is an advisory service that provides innovative ideas and a unique space for interdisciplinary research and collaboration on core Commission priorities.

B. Operating context

The EU faces a series of **challenges** resulting from four global transformational trends; technological development (especially digitisation), climate change, the changing nature of work and society and the geopolitical shift from West to East. With **strategic foresight**, the European Commission aims to anticipate these complex challenges, as well as crises such as the 2020 COVID-19 pandemic, that cut across policies and portfolios. While **knowledge**, which can help identify and address the challenges, has never been so easy to access, it has never been so hard to decipher and make sense of it. In all this, the JRC's **cross-cutting** support, knowledge, competences and tools are essential assets.

As the in-house science and knowledge service of the Commission, the JRC can react quickly to new priorities and in particular to **emergencies**. This was particularly in evidence in 2020 as the JRC mobilised its crisis management tools, and adjusted its previously planned work, to develop and deliver services to both short-term operational management of COVID-19 as well as the medium and longer-term policy responses such as the exit and recovery strategies.

The JRC was set up by the Euratom Treaty and its main **activities and budget** are set out in the Community research and innovation framework programmes and the European Atomic Energy Community nuclear research and training programmes[4]. JRC carries out its work in-house (direct management mode) and supplements a small part of its budget through contractual activities. Its work also contributes to the strategic programming of research funding by the Community.

The JRC operates nuclear research facilities, with the long-term aim to return the sites housing such facilities to a greenfield status[5]. The Commission has proposed a 'Dedicated financial programme for decommissioning of nuclear facilities and management of radioactive waste', which includes a budget for the JRC's activities.

The JRC differs from the typical Commission Directorate-General concerning:

- *governance*: the JRC has a Board of Governors[6] made up of national representatives;
- *geographical spread*: the research infrastructures of the JRC are spread over six sites in five different Member States (Figure 1). This requires particular efforts in terms of coordination and day-to-day work;
- *site management*: the JRC is responsible for the full management of its sites outside Brussels (infrastructure including laboratories, logistics, health and safety,

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[4] Council regulation 1314/2013 and covering the JRC nuclear direct actions under the Euratom Programme for Research and Training

[5] In principle, restored to the conditions existing before the construction of the plant.

[6] 96/282/Euratom: Commission Decision of 10 April 1996 on the reorganisation of the Joint Research Centre

environment, security). The mutual rights and responsibilities with the host Member States are set out in site agreements with the Commission;

— **quality certifications:** the JRC's Integrated Management System (IMS) is certified according to the quality system ISO 9001, providing the framework for standards covering also health and safety and environment.

The wide networks of stakeholders, partners and beneficiaries of the JRC include:

— EU Institutions and agencies,
— Member States, candidate countries and associated countries,
— international organisations,
— industrial associations,
— non-govermental organisations and individuals,
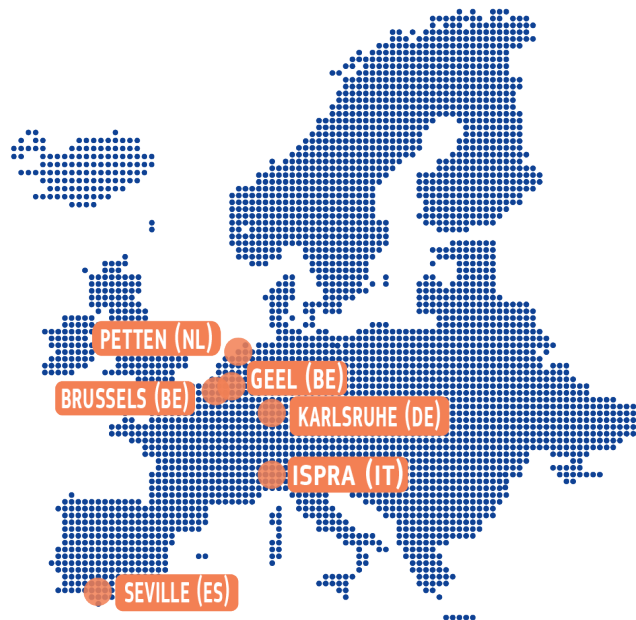— other research and technology organisations and universities.

Figure 1. JRC sites

C. Strategy

The JRC Strategy 2030, defined in 2016, sets out medium-term goals, with the vision *'to play a central role in creating, managing and making sense of collective scientific knowledge for better EU policies'.* The strategy provides the framework for addressing the challenges the European Commission is facing and defines **the JRC's priorities**:

- enhancing the **focus on impact**, through increased work for central services and central Commission policymaking tools and processes such as better regulation, impact assessments and evalutions;
- improving the evidence base for policymaking through **knowledge management**;
- balancing the portfolio of activities and embedding **foresight** to address emerging challenges such as demography and migration, in particular in the socio-economic areas;
- breaking silos – providing a more **integrated response** to complex policy issues;
- **developing its sites** into modern science campuses, including enhanced sustainability and the further opening of selected research infrastructures to third parties.

This Strategic Plan includes actions to respond to the **COVID-19 pandemic**. JRC has identified six priorities addressing the mitigation, exit and the recovery strategies (see under 'Responding to crisis and emergencies' section). From the start of the pandemic, it has used and adapted its models to monitor the spread of the virus and the effectiveness of containment and de-escalation policy measures, to assess the socio-economic impact of the pandemic and related policy initiatives; contributed to building the capacity for testing in Member States through its competences in reference materials and measurements; and monitored the (dis)information in media and perception of citizens.

As the science and knowledge service of the Commission, the JRC's research programme and the other activities described contribute to a 'Modern, high performing and sustainable European Commission' (European Commission General Objective 7), with an intended impact of an enhanced image of the European Union. The priorities and some specific mandates given to the JRC by the Commission have been translated into specific objectives as set out below and in the performance tables.

All of JRC's contributions to evidence-based policymaking are described under one specific objective (7.1) and the performances are tracked by result indicators. Given that the JRC manages sites and infrastructures, a specific objective (7.2) and indicators have been defined related to the goals of the JRC Strategy 2030. For its mandate to support intellectual property (IP) management in the Commission, a specific objective (7.3) and a related indicator have been defined related to the capacity of the Commission to manage its IP.

Decommissioning and waste management are a part of the life-cycle of nuclear facilities and hence these activities support the aims of the 'European Green Deal', in particular emissions reductions and energy savings. Given the relevance of the programme on

Nuclear Safety and Decommissioning for the JRC, this aspect is included under the frist Commission general objective and captured in two specific objectives (1.1, 1.2) and 6 result indicators. For a schematic representation of JRC's contribution, refer to Figure 2.

Commission General Objective 7

A modern, high-performing and sustainable European Commission

JRC Specific objectives

7.1 The JRC supports evidence-informed policymaking through creating and managing high-quality and fit-for-purpose scientific knowledge

Working methods

| Scientific excellence, impact and efficiency | Open science | Responding to crisis and emergencies | Working with Stakeholders | Communication |

General objectives

GO1 The European Green Deal
GO2 A Europe fit for the digital age
GO3 An economy that works for people
GO4 A stronger Europe in the world
GO5 Promoting our European way of life
GO6 A new push for European democracy

Better Regulation

7.2 The JRC operates modern, sustainable and open research campuses

7.3 The Commission has appropriate capacity to manage risks related to intellectual property (IP) rights and be compliant with the rules and regulations

Commission General Objective 1

the European Green Deal

JRC Specific objectives

1.1 The JRC progressively decommissions its disused nuclear facilities and safely disposes of its radioactive waste

1.2 The JRC establishes links and tools for nuclear decommissioning knowledge sharing and dissemination with stakeholders in the Member States

Figure 2. JRC's contribution to Commission's General Objectives

JRC's intervention logic in Figure 3 shows the main drivers and outcomes of JRC research.

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to **support EU policies with independent evidence** throughout the whole policy cycle.

NEEDS
Societal challenges; Research needs defined together with Commission's policy departments

LEGAL MANDATES
Horizon Europe & Euratom Treaty establishing a joint nuclear research centre

OBJECTIVES
Horizon Europe; Euratom; Commission general objectives; specific objectives by policy area

INPUTS
Budget m€ 410-420 under framework programmes for research & contracts; ca. 3000 staff of which over 2000 in scientific/technical functions

SCOPE
Cross-cutting support covering all key policy areas

ACTIVITIES
Creating, managing and making sense of knowledge; anticipating emerging issues; foresight; operational services for EU (e.g. crisis management, reference laboratories, bureaus, data centres)

INDICATORS

Output: policy support productivity indicators; scientific productivity indicators

Results: policy outcome indicator; scientific outcomes indicators; partner/stakeholder satisfaction

Impact: measurable through evaluations of EU policies

OUTPUTS
Study reports, data, technical systems, standards & services

RESULTS (OUTCOMES)
Incorporation of scientific and technical knowledge into policy proposals or to support the implementation of EU policies

IMPACT
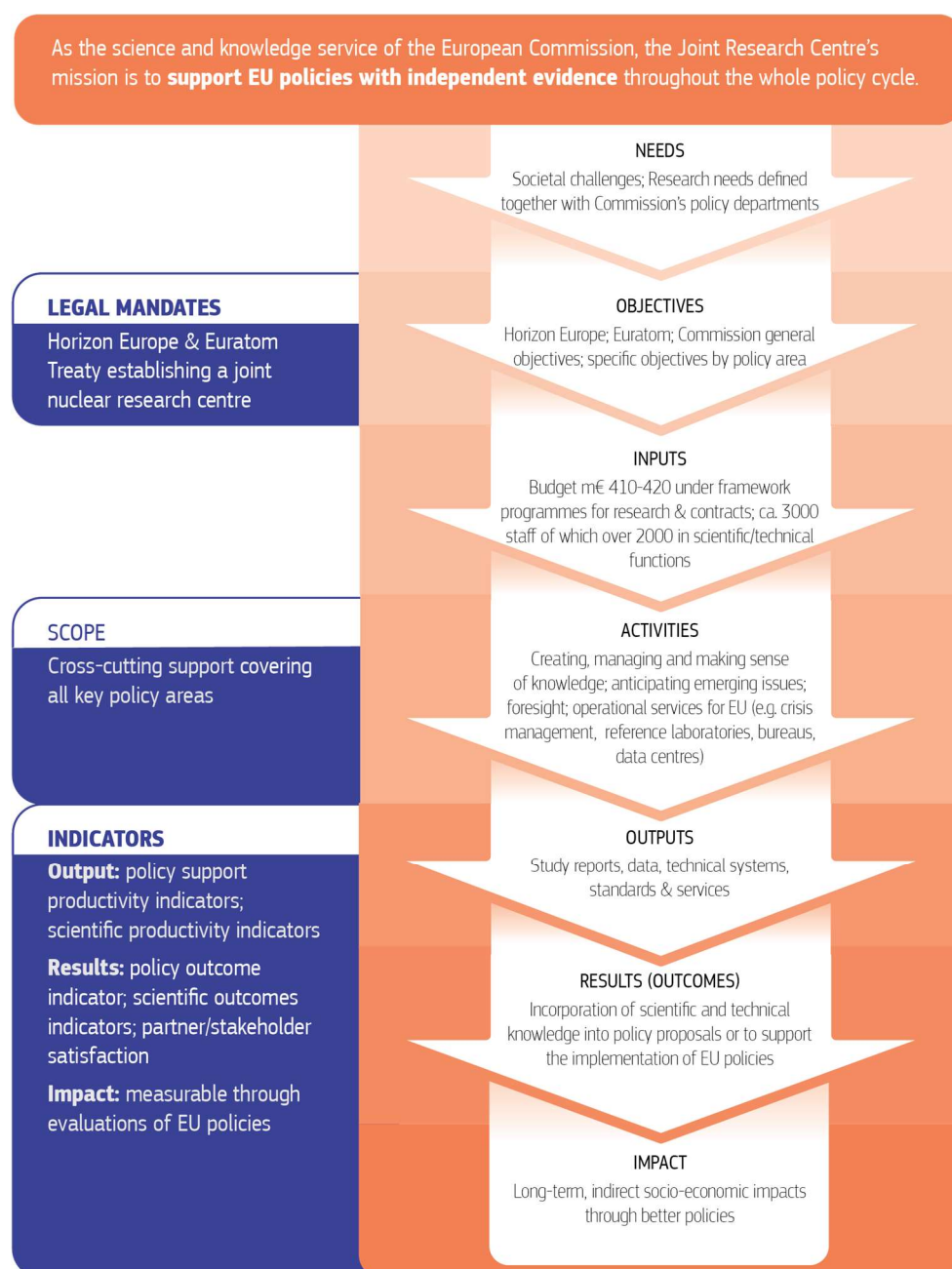Long-term, indirect socio-economic impacts through better policies

Figure 3. JRC intervention logic

Beyond its extensive in-house knowledge, the JRC works together with world-leading partners to enhance the evidence base for policymaking. A close cooperation with Member States and candidate countries is key to all of the JRC activities. Its knowledge centres, communities of practice and open access schemes to its physical research infrastructures provide increasing competence and opportunities for sharing knowledge and best practices. Besides the EU added value deriving from direct support to European policymaking and the Member States, the JRC produces added value also by supporting intergovenrmenal and international organisations e.g., the Organisation for Economic Co-operation and Development (OECD), the World Bank, the International Atomic Energy Agency (IAEA) and the International Organization for Standardization (ISO).

A modern, high-performing and sustainable European Commission

Specific objective 7.1: The JRC supports evidence-informed policymaking through creating and managing high-quality and fit-for-purpose scientific knowledge

As a transversal service, the JRC aims to provide cross-sectoral and multi-disciplinary support to the six general objectives of the Commission. Its research programme is designed to benefit from synergies between projects and to optimise the impact on policymaking across sectors. For example, the JRC provides geographic (from global to local) knowledge and bundle a number of enabling competences, such as composite indicators or modelling, in Competence Centres which provide support across different policy areas.

Nevertheless, in order to structure this strategy and provide an explicit link to the Commission priorities, the JRC's policy support is presented here under the themes of the six general objectives. The JRC's main cross-sectoral and cross-cutting activities are listed before the six general objectives. A specific section on better regulation is included under the subheading for general objective 6.

Scientific excellence, impact and efficiency

For policies not to be challenged on the basis of the quality of its evidence, the JRC aims to maintain its good track record in scientific excellence as measured by bibliometric indicators (see performance tables in Annex). In addition, the JRC is enhancing its quality assurance, for example by setting up an editorial review board.

The evidence provided by JRC also needs to be relevant and fit-for-purpose and the JRC is continuously striving to enhance its impact on policymaking – as measured by indicators on policy impact and customer satisfaction – by systematically analysing impact pathways, or research on the interaction between policymakers and evidence providers.

The JRC aims to provide services in an efficient manner and therefore monitors the timeliness of its services to policymakers.

Open science

The JRC's initiatives related to **open access and capacity building** provide targeted opportunities for collaboration. Pilots on open access to research infrastructures and doctoral training in co-operation with universities have been initiated and will gradually be

built up over the coming years. In addition, JRC is setting up a new framework for its specialist training for Member States in its areas of expertise under the label 'EU academy'.

Responding to crisis and emergencies

The JRC has helped the EU in handling of a series of sensitive files, such as those related to dioxins, endocrine disruptors, vehicle emissions and the insecticide fipronil in eggs, helping diffuse sensitive situations through objective scientific advice and rapid response. The JRC will continue to enhance the Commission's capacity for crisis management with methods, tools, data and knowledge both for short-term actions and for longer-term policy measures. The scope will continue to be broad, covering food and feed safety, natural and human disasters, security and health. The JRC will enhance its ability to react at short notice to emerging crises.

In response to the **COVID-19 pandemic**, JRC is taking actions addressing both short-term and medium-term needs around six priorities:

- epidemiological monitoring, modelling and reporting which will help to monitor the spread of the virus, assess the effectiveness of policy measures and mitigate the impacts;
- use of alternative data (e.g. from mobile phone operators) and digital technologies to help understand the impacts of restriction measures, design exit strategies and monitor their effectiveness;
- testing, genomics, diagnostics and health to improve the testing capacity in Member States. In cooperation with Commission services and Member States, this will include an information platform on the effectiveness of tests, provision of control materials, and setting up a network of COVID-19 reference laboratories;
- socio-economic modelling and analysis to understand the impact of the pandemic and related policy measures on industrial sectors, employment, income and fiscal stability, education and gender inequality;
- travel, tourism and transport where JRC will i.a. model the impact of mitigation actions (e.g., travel restrictions, reduction of tourism capacity) in support of the identification of regional vulnerabilities, emergency and recovery plans;
- citizen pulse aimed at better understanding perceptions, concerns and behaviours through media analysis, surveys and behavioural research.

Working with stakeholders

The JRC helps **Member States** with the implementation of legislation and actions across a wide variety of policy fields and helps candidate countries with the take-up of the EU body of law. By leading EU-wide processes defined in the legislation, the JRC saves

administrative costs at Member State level, for example through the European Integrated Pollution Prevention and Control Bureau for industrial emissions and its technical lead for the implementation of the INSPIRE directive[7].

Through the JRC, the Member States and candidate countries can tap into best practices and rich data sources, including e.g. training for Member States enforcement laboratories. The JRC is expanding its communities of practice, developed over the last four years for the knowledge centres, with experts from Member States to ensure mutual benefits.

The JRC collaborates closely with the Directorate-General for Structural Reform Support to provide technical assistance to the Member States in the area of tax and social benefits reforms.

In collaboration with the European Centre for Disease Prevention and Control (ECDC) and a network of Member States, the JRC is working on the improvement of the quality and reliability of diagnostics of COVID-19, providing adequate reference materials and performing validation of some selected methods.

The **regional dimension** will continue to have an important focus on JRC's work, be it through the Smart Specialisation platform or territorial modelling across different sectors.

JRC will continue to work with **industry representatives** in formal consultation processes (such as for the Industrial Emissions Directive, Vehicle Emissions Alternative Methods), in the frame of research cooperations, and by providing some services (such as testing, access to laboratories etc).

The JRC encourages people's trust in the legislator through **citizen engagement**, through operational support such as GMO testing of imported foodstuffs and by providing knowledge for the public such as radio-activity in the environment.

Communication

The JRC's external communication activities aim to foster awareness and recognition for the need for evidence-based policymaking and to reinforce the credibility of the EU key messages and policies, while positioning the JRC as the science and knowledge service of the European Commission. In line with the Commission priorities, the JRC is focussing its communication on: supporting the fight against the COVID-19 pandemic, contributing to the economic recovery and societal resilience, climate and digital transitions, foresight.

The JRC strives to communicate the value of its work for Europeans and policymakers, both at European and national/regional level, using its full communication portfolio, from science communication to a rich online offering, to innovative citizen engagement techniques, to

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[7] Infrastructure for Spatial Information in the European Community directive

training for journalists, to visits and on-site events with increased emphasis on digital events, in its sites and world-class scientific infrastructure. JRC's efforts to promote science for policy actively reaches out to member states, regions and cities across Europe, e.g. via the 'Science meets Parliaments/Science meets Regions' initiatives. After a successful pilot phase, with participation of over 25 local, regional and national authorities, JRC will be looking to create a more structural basis for evidence uptake in public policymaking across the EU, involving the innovation camp methodology, interregional collaboration and capacity building through dedicated training initiatives for policymakers.

The JRC will continue to work closely with other Commission services and with the corporate communication function to leverage synergies and contribute to common projects. It will pursue its advisory role on issues of dis/misinformation, behavioural sciences, science for policy and citizen engagement.

To improve the effectiveness of its communication of science to citizens, the JRC has been working with science museums since 2018. Following the successful collaboration with the Natural History Museum of Berlin in 2018, the next step of this initiative will be working with the science museum in Milan, where the aim is to develop a fully virtual / augmented reality interactive visitor experience on the subject of artificial intelligence.

The European Green Deal

The **European Green Deal** will transform almost every key aspect of our economy. The EU will have to take the lead on significant transitions in social, economic and environmental systems across a wide range of sectors to become climate-neutral by 2050, put the EU on a sustainable economic growth path and establish the framework for the recovery from the current COVID-19 pandemic. The JRC will provide evidence for shaping these policies and for supporting their implementation, contributing to all the main headings under this political ambition.

It will use its expertise in scenario development, accounting for greenhouse gases (GHG) emissions in different sectors and impact assessment of climate adaptation and mitigation options to inform the setting and implementation of **climate targets for 2030 and 2050** across various policy areas, and to design local measures (such as the Convenant of Mayors) for reaching these targets. Through an increased focus on climate and energy diplomacy, it will leverage Europe's vast experience with developing scenarios towards climate neutrality, and GHG emissions monitoring and verification to support third countries and enhance the global climate ambition.

In support to policies on **clean, affordable and secure energy**, an increased emphasis will be given to upscaling deployment of gas and electricity, renewables (e.g. offshore wind and photovoltaics), negative emission technologies, renewable gases including green hydrogen, key enabling technologies such as batteries, and to ensuring their smart integration in a secure, interconnected and digitilised energy system. Technology and market assessments will support the deployment of renewable energy technologies. With

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nuclear energy being part of the energy mix for the green transition, the JRC's research on energy technologies will also include the safety of nuclear fuels and power plants as well as new reactor designs, such as small modular reactors (SMRs).

The main activities on the **clean and circular economy** will be along the following strands:

- studies on technology options, best available techniques reviews, economic impact assessments and support to product, waste and raw materials policies (such as the Ecolabel Regulation, the Green Public Procurement Communication, the Energy Label Regulation, the Energy related Products Directive and the Directives on waste). Circular economy goals will be further integrated into the process for drawing up and reviewing best available techniques (BATs) reference documents (BREFs);
- pre-normative research on performance and safety of batteries, hydrogen storage and fuel cells will facilitate the deployment of these technologies;
- support to critical decision-making process in the coming years on how to **decarbonise the industry** to reach climate neutrality. It will set up a new Energy Industry and Geography Lab and will address potential bottlenecks and opportunities in supply chains for low carbon technologies issues as key elements in the global race to recovery. The JRC will carry out techno-economic assessments of energy-intensive sectors. The transformation of energy systems will be assessed from a technological, economic, sustainability and social perspective.

JRC will continue to advise policy DGs on how to best shape and implement **energy efficiency** policies at national level by carrying out assessments of policies, sectoral footprints (e.g. ICT) and market sectors (heating and cooling). The proposed '**Renovation Wave**' will be supported with research into developing the a relevant codes and standards for enhancing the sustainability and resilience of construction materials.

The JRC will help accelerate the shift to **sustainable and smart mobility** by taking both technology-based (vehicle emissions) and systems-based (transport systems) approaches. The laboratory and modelling work on emission standards and type approval procedures for vehicles, including advanced car concepts such as autonomous vehicles, will support current and future emissions reduction policies. Starting in 2020, the JRC will also have a role in market surveillance of motor vehicles. The integration of electric vehicles into multi-modal transport systems and the deployment of alternative fuels will be facilitated by studies on infrastructure and their scale-up into pre-normative research on the safety and efficiency of hydrogen fuel and batteries

In support to policies on **food systems (Farm to Fork Strategy)**, JRC will address both agriculture and the blue economy. In order to enhance the sustainability of EU agriculture and food systems, it will carry out economic and environmental modelling of their impact on the environment and climate, as well of agricultural markets. Economic analyses will aim to underpin policies for a fairer and more balanced food chain and rural areas (Europe and wider world). Specific interventions examine the role of the common agricultural policy in reducing GHG emissions and increasing sinks, in preserving and restoring ecosystems and biodiversity, in achieving zero pollution and establishing a fair, healthy, environmentally

sustainable food system. The climate resilience of agriculture will be monitored with crop forcasts and dedicated studies such as changing patterns of plant diseases. Food safety will be promoted through a number of European Reference Laboratories and the Knowledge Centre on Food Fraud and Quality. Generation and collection of evidence, and its dissemination and accessibility to policymakers and stakeholders is being assured also through the **Bioeconomy Knowledge Centre** and the assessments and monitoring under the **Blue Economy.** The JRC will continue to assess the sustainability of fisheries and acquaculture.

JRC's research will impact policymaking on **ecosystems and biodiversity** through modelling, status monitoring, developing scenarios and assessing options. The work on biodiversity will be bundled in a **Knowledge Centre for Biodiversity**. As the European Green Deal commits the EU to improve and increase its forested area, and to fight deforestation, the JRC will set up an EU observatory on deforestation and forest degradation. It will continue to monitor the status of forests and of forest resources. Given the importance of **soil** health to agriculture and other sectors, an EU Soil Observatory will be established supporting the regular monitoring, reporting and verification of these practices. **Water** quantity and quality will be addressed through JRC's activities on water, energy, food and ecosystems (WEFE) and the JRC water quality assessments, where the JRC also acts as a platform for the UN World Water Quality Alliance. WEFE activities are an example of integrated approaches in the JRC strategy.

Research on pollutants and toxic substances has been a JRC specialty since the 1980s. The JRC will accompany partner DGs in implementing and designing environmental policies for a **zero-pollution ambition for a toxic-free environment**. For instance, the JRC will contribute to strengthening EU provision on air quality plans, operate the European Integrated Pollution Prevention Control Bureau, which is at the core of the implementation of the Industrial Emissions Directive, as well as carry out safety assessments of chemicals such as micro- and nanoplastics, pesticides and endocrine disrupting chemicals. It will also monitor and assess the environmental status of water and oceans, i.a. through satellite and ground-based observations.

The implementation of some of the key actions related to the 'EC Action Plan on Financing Sustainable Growth' and the 'European Green Deal Investment Plan' will be supported with methodological developments for **Green Deal investments** (such as the taxonomy for sustainable economic activities, the Ecolabel for financial products and climate risk assessment in the management of banks (climate stress tests)), and modelling of impacts of investment and funding tools on growth, jobs and environment. Sectoral research will also touch on the **societal impact** of the European Green Deal (including regional opportunities and threats in the energy and transport sectors and beyond) and support the development of policy options that address fairness and prosperity.

From a **research, innovation and competitiveness** perspective, the JRC will assess innovation relevant to achieve competitive sustainability, covering all sectors of the economy with a special focus on energy and mobility activities. It will monitor corporate Research & Development (R&D) investment efforts in relation to the Green Deal and

sustainability objectives, focusing on world's top R&D investors. The activities on smart specialisation will include support to the transformation towards greener & smarter regions.

A Europe fit for the digital age

Within the **EU's digital strategy** the European Commission will focus its actions on three objectives:

− **'Technology that works for people'** and add value to people's daily life,
− **'A fair and competitive digital economy'** with a frictionless single market,
− **'An open, democratic and sustainable society'** where everyone is in control of their actions and the data they provide online and offline.

This goes hand in hand with the importance of addressing the challenge of digital skills in education, training and employment.

The JRC will prioritise and focus on areas where it can make a difference, such as those related to regulatory requirements and those with a foresight dimension.

A strong emphasis will continue to be given to technology assessments, pre-normative research on standards and on interoperability to reap the benefits of new and developing technologies. Big data and data platforms, interoperability of wireless communications and spectrum management, smart systems, cybersecurity and communication infrastructures are just a few areas where JRC's research connects to the societal challenges that require study for appropriate policy design. Examples are the interoperability of space technologies, robust cybersecurity solutions for a digital society secure by design, and use of Copernicus Sentinel satellite data in different applications. JRC will continue its scientific and technical support to EU's global navigation satellite systems and applications. Furthermore, the JRC has a task in the new space regulation to assess the fitness for purpose of the Copernicus services and products. A **new knowledge centre** is planned to bundle the activities for earth observation and Copernicus. For the goal **'Technology that works for people'**, the JRC supports the implementation of the European strategy for Artificial Intelligence (AI) and provides evidence to guide future related policies through 'AI Watch', the Commission knowledge service to monitor the development, uptake and impact of Artificial Intelligence for Europe[8]. Research on deployment of **blockchain-enabled systems** in specific areas such as taxation, where JRC operates a facility to test and deploy large scale blockchain use-case scenarios, will focus on scalability, performance, cybersecurity and data-protection issues.

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[8] https://ec.europa.eu/knowledge4policy/ai-watch_en

Since the impact of the **digital transformation** is not limited to the economic aspects, the JRC will also focus on the social dimension (social economy) and the impact on human behaviour and skills, systematically paying attention to resilience, fairness, security and vulnerability aspects. This includes research on new forms of governance, and the changing role of the public sector in creating social benefit.

In support to the legislation and standardisation under the **industrial strategy**, there will be new emphasis on sustainability and resilience of materials in energy-intensive sectors (such as construction, transportation and e-mobility, textiles).

For more than 25 years the EU Single Market has provided a comprehensive and reliable legislative framework for conducting business across Europe. Since its creation, the European **standardisation** policy has played a fundamental role in its implementation and integration. In a number of areas such as the circular economy, health, consumer product safety, construction, digital, energy, food and feed safety, and others, the JRC provides knowledge and tools effectively promoting harmonisation and standardisation and hence enabling coherent implementation of EU policies. Its role is acknowledged in the Recital 26 of the Standardisation Regulation which stipulates that 'this Regulation should ensure that the JRC can play an active role in the European standardisation system'. JRC will develop a strategy for its standardisation activities to ensure that they will focus on new priorities.

An economy that works for people

The JRC will focus on two main policy areas linked to this general objective

- **Jobs, growth and investment**

The EU needs to take decisive actions as it is gradually losing its competitive edge in the global competition. Europe has not yet achieved the same level of coordination and unity of purpose as the US and China, so its priority is to close the productivity gap between those regions which are at the world technology frontier and those which are lagging behind, thus achieving stronger economic and social convergence, as well as territorial cohesion.

The JRC has a wealth of useful data and analysis at local, regional and national level. It will carry out industrial, competitiveness and innovation analysis and conduct territorial modelling for assessing **EU Investments** and for assessing policy impact with a focus on European regions and sectors. It will analyse drivers and trends in productivity of firms, sectors and regions, the national framework conditions for the emergence and development of high-growth enterprises and small and medium enterprises and access to finance including venture capital. The JRC will continue to deepen its analysis of the labour market and social transformations caused by the digital revolution and the COVID-19 pandemic, with a strong focus on their implications for employment and social policies. The JRC will continue to help Member States and regions design and implement **innovation strategies** as well as provide targeted support to enhance their innovation ecosystems and improve technology transfer. It will also run specific projects for lagging regions. Some examples of

ongoing activities, which will be further developed, are the **smart specialisation** approach extensively implemented in the EU and increasingly inspiring countries and regions outside the EU, the Selfie instrument fostering the **digitalisation of schools** and reliable models for assessing the effects of **tax-benefit reforms** in Member States. Other examples include definition of new paradigms of growth and well being in rural urban areas and of new paths of sustainable and competitive tourism in the frame of the **Knowledge Centre for Territorial Policies**.

- **A deeper and fairer economic and monetary union**

The long-run economic prosperity of the EU should also rest on macroeconomic and financial stability, while ensuring that Member States conduct sound fiscal policies and undertake necessary structural reforms, putting social cohesion at the core of economic policies. The JRC will support the analysis of the fiscal impact and social dimension of reforms, providing i.a. modelling support to the analysis of **income inequality and poverty** developments in the EU.

It will assess the fiscal stance of the Member States within the **Stability and Growth Pact** by estimating the output gap and evaluating how more flexibility could cohabit with fiscal responsibility. It will assess the resilience of the European Monetary Union to economic shocks and identify policies that can enhance resilience.

The JRC will contribute to the legislation for the **completion of the banking union**, by modelling the impact of different policy options.

In the von der Leyen Commission, the **European Semester**[9] will be refocussed into an instrument that integrates the Sustainable Development Goals (SDGs). The JRC already provides various contributions to the European Semester and with its extensive knowledge, models to assess the integration of SDGs in national policies and methodologies to analyse the gaps vis-à-vis SDG targets, the JRC is also well placed to contribute to the renewed vision of the European Semester.

In addition, as the demand for country knowledge keeps growing, the JRC will strenghten its role in country knowledge management, for example through:

- country knowledge assets and needs mapping and analysis,
- building the Commission and external country knowledge communities of practice,
- use of Artificial Intelligence for better management of country knowledge.

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[9] The overarching framework for economic and budgetary coordination.

The JRC has several work streams that will contribute to the von der Leyen Commission plans for **a stronger Europe in the world.**

A new comprehensive strategy on **Africa** will be able to build on JRC's broad knowledge and data collected across many fields of expertise over the last 20 years and that will be made available through a **single entry point platform**. Together with a sound modelling capacity for sustainability assessment, these data and knowledge will provide a rich material and evidence base for foresight, development and cooperation policies and programmes. Existing networks with local and international partners (for example on natural resources, food security, trade, security, CBRN[10] Centres of Excellence) connect the JRC scientists with the African research communities and enable effective collaboration and capacity building. New projects to gather new or improved data will be initiated to, i.a. understand future urbanisation, map achievement of the SDGs and support the definition of the post-2020 country programmes in the frame of the comprehensive Strategy with Africa. The work of the **Knowledge Centre on Global Food and Nutrition Security** will be extended to cover new risks, including the impacts of COVID-19. Close interaction exists with international organisations such as UNEP and the OECD in relation to socially responsible and improved environmental performance. This includes issues such as the raw materials resources and circularity in Africa, making use of the EC's Raw Materials Information System led by the JRC.

The JRC is involved in the **foreign direct investment screening** of non-European investments, monitoring investments and acquisitions of European companies in strategic sectors. JRC expertise identifies key trends in non-European investment especially coming from state owned enterprises. The JRC will continue monitoring **China**'s innovation and industrial performance, its regime of intellectual property rights and reciprocity in the access to markets. The JRC's research will also support the EU–China strategic agenda 2020 implementation, including the areas of climate change, soil and air quality, decarbonisation technology, emissions standards for motor vehicles, disaster prevention and response, research in nuclear safety and security, food safety and security, Earth observation/digital Earth and the Sino-EU Panel on land and soil.

In the EU policy for the **Western Balkans**, the JRC will play an enabling role to accelerate structural and institutional reforms and promote smart and sustainable growth. It will also provide scientific advice for renewing the partnerships with the **Southern and Eastern neighbourhood** through trade, as well as for implementing the **EU policy for the Arctic**.

JRC's research on **SDG relevant topics** will be bundled in a cross–cutting action to support EU global leadership in SDG policies definition, monitoring progress, evaluating impact of

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[10]CBRN: Chemical, biological, radiological and nuclear materials that could harm the society through their accidental or deliberate release, dissemination or impacts.

policies, programmes and projects and foreign investments and scientific outreach. With respect to local actions, the JRC will address the Member States', the developing and the neighbourhood countries' special needs, supporting local actions and helping to achieve public engagement.

The JRC will also support Europe's commitments to various **UN conventions** on environmental matters, the Non-Proliferation Treaty (NPT), Comprehensive Test Ban Treaty (CTBT) and UN Sendai Framework, enabling the definition and implemention of **international requirements and standards**.

JRC's worth and agility in crisis has been recently proven by its fast response to the 2020 COVID-19 pandemic. JRC will be working with African partners and others to develop information and decision-making tools based on tracking and modelling the spread of the virus and simulating the impact of public health measures. In a larger perspective, JRC's early warning systems, such as for floods, wildfires and droughts, crop yield forecasting and agricultural production anomaly detection and the global disaster alert and coordination systems help the Members States and third countries **prepare for disasters and manage crisis worldwide**. While the EU's Emergency Response Coordination Centre (ERCC) will be reinforced, the JRC will contribute by developing its Copernicus emergency management service and crisis management tools. The JRC's European Crisis Management Laboratory will evolve to become a reference centre for disaster risk management, providing scientific advice during emergencies and it will be the backup for the ERCC. New technologies for crisis management will be investigated. The JRC will continue to operate the EU Disaster Risk Management Knowledge Centre.

The recent COVID-19 pandemic has put EU **strategic autonomy** in the headlines. In this area, the JRC will focus on critical infrastructures (e.g. for energy, transport, defense and finance), critical technologies (e.g. Artificial Intelligence, robotics, space and nuclear), critical inputs/products (e.g. raw materials, food security and medicines), access to sensitive data and freedom of the media. Analysing value chains and trade flows of strategic products for the EU economy will support the design of a new world system of trade agreements and to preserve the values of EU and provide models to the rest of the world.

Promoting our European way of life

The JRC's research will contribute to building stronger, more cohesive and more resilient European societies, **promoting the European values of solidarity, equality and fairness**. Its data and analyses will help define EU's responses to migration and protection of external borders.

The JRC-led **Knowledge Centre for Migration and Demography** will inform policies, such as the Commission's New Pact on Migration and Asylum, the reform of the Common European Asylum Policy and the Schengen Area of free movement. The JRC data, models and tools will be used to analyse the impact of migration flows on e.g. welfare systems within and outside the EU, and the attitude to and perception of migration supporting the understanding of the relationship between migration and demography. The JRC will also develop multi-dimensional demographic scenarios to understand the impact of population

change for the future of the EU. Modelling and simulations will be carried out to assess the effects of new proposals and monitoring of the implementation of adopted measures.

Education and skills are a top priority for the EU. Modernising education, lifelong learning and developing transversal skills are key for addressing challenges related to promoting our European way of life. The JRC has longstanding experience in this area and will work together with the Member States and academia to fight unemployment by equipping people with the skills they need and by promoting equal access to opportunities, education and training. The JRC will support less developed regions in reinforcing the skills dimension in the context of regional innovation strategies for smart specialisation and in improving the understanding and management of brain drain which is a crucial element of innovation and growth. The JRC will also study the demographic and digital transitions and aspects related to youth mobility, migration, education and skills. Furthermore, the JRC will contribute to developing a European education area. The Commission has already presented a first package of measures addressing key competences for lifelong learning, digital skills, common values and inclusive education, where the JRC's work will contribute particularly to the digital education action plan.

In the area of **security** the JRC will contribute to **fighting terrorism and cyber threats** by improving information exchange and strengthening information systems for security and border management. JRC aims to **provide an integrated and comprehensive approach to Europe's security**. It is focused around **four pillars**, which cover challenges that have both an EU-internal and an international dimension:

- a future-proof secure environment (cybersecurity, public spaces and critical infrastructure),
- tackling evolving threats (cybercrime, fight against child sexual abuse and identity thefts and hybrid threats),
- advancing on responses to all threats (terrorism, radicalisation and organised crime),
- a strong security ecosystem (public-private cooperation, skills and awareness raising, law enforcement cooperation and information exchange, interoperability).

Key activities for the next four years will be cybersecurity, the new **EU Innovation Hub for security**, the launch and implementation of the **JRC framework for hybrid threats**, a **knowledge centre for critical infrastructure protection and resilience and strategic autonomy of technologies**.

The JRC approach to security will continue to be comprehensive, including aspects of hybrid threats, resilience and terrorism. The JRC will provide underpinning scientific research to support the EU Security Union Strategy, the European Agenda on Security and action plans with experimental and scientific analysis in crosscutting areas. It will cover issues such as dual use, defence and cybersecurity, chemical, biological, radiological, nuclear and explosives threats, and hybrid threats. It will assist in designing conformity assessment, market surveillance and certification frameworks that ensure the implementation of EU security policies and the competitiveness of the industry. It will facilitate the set up of the EU Innovation Hub for internal security that will pull together competencies from detection

to forensic techniques and enhance law enforcement cooperation within the Union. The importance of space, 5G and quantum technologies to support security services and applications will be reflected in JRC's work programme as well.

The European way of life is also about how the EU and its Member States deal with **health care.** Although health is not an EU competence, the Commission puts forward European actions that help ensure that Europeans have access to safe, quality medicines and medical devices at acceptable cost, the health care systems are sustainable and the sector stays competitive in the global market. The JRC will provide analyses of the safety and performance of medical devices and diagnostics, best practice guidance and technical specifications, and a framework for postmarket surveillance.

In support of the Europe's Beating Cancer Plan and the Member States' efforts to improve cancer prevention and care the JRC will initiate a **Knowledge Centre on Cancer**. This knowledge centre will connect the Europe's beating cancer action plan with the new research mission on cancer and facilitate links with other relevant policy areas such as environment, energy, transport, nutrition, behavioural aspects, and contribute to the European health data space. Other work items include rare diseases registries and mapping antimicrobial resistance and its impacts. In close collaboration with Directorate-General for Health and Food Safety and the ECDC, the JRC provides significant support to deal with the current COVID-19 pandemic and will continue to deploy activities in relation to diagnostics, therapies and vaccines. It is involved in the setting up of a COVID-Registry and in early warning methodologies. It will model the spread of the virus and the impact of different policy responses for the short and longer term.

A new push for European democracy

Scientific evidence can contribute significantly to democratic decision-making. It can provide a sound empirical basis for political choices to be made by democratically elected representatives. Good policy decisions need therefore to be based on both evidence and values. It is crucial that the evidence provided is objective and neutral, free from political or commercial interference. So far the JRC has provided such evidence in support of sensitive policy areas ranging from vehicle emissions, to endocrine disruptors or dual quality of food, and it will continue to support EU policies in this sense.

At the same time, the JRC will also help the Commission **rethinking the way EU policies are prepared and decided**, to enhance the ability of policymakers and legislators to deliver evidence-based policy that is close to the heart and sentiment of Europeans. For this, the EU's capacity to anticipate societal challenges needs to be strengthened. Responding to the different values of Europeans and regional/territorial specificities, including demography, will be even more important. To this end, JRC helps regions and cities in localising the implementation of EC objectives and supports the coordination between different governance levels at European, national, regional and local level.

Awareness is key in dealing with **disinformation**, and JRC will continue with its research that has already led to advanced AI-based tools for disinformation detection.

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The JRC's research in the area of behavioural science and humanities will look into the way non-rational factors, such as emotions, values, identity or exposure to new communication technologies, influence **political behaviour**. Its expertise will be used to protect EU's digital platforms from being used to destabilise society. Insights into new challenges, for instance brought by demographic change through migration, will be made available to policymakers.

At the same time, the **Europeans' engagement in the EU project** is key to maintaining and boosting the European democracy. We need to involve all actors in shaping the responses to challenges. These responses should rely on sound interaction, co-creation and co-production, on building knowledge communities and communities of practice. New ways of working with Member States, stakeholders and individuals can improve decision-making and implementation and ensure citizen support for EU policies. While significant efforts have been devoted to strengthening the framework for stakeholder consultation and launching citizen dialogues, the potential of engagement has not yet been fully exploited. The JRC will contribute to the Commission's longer-term perspective on engaging Europeans in deliberative processes. This comprises developing initiatives and creating contexts for interacting with citizens and their representatives at EU, national and regional level, empowering them in their daily choices as well as restoring the trust in experts and science and the role they play in defining evidence-based policies, realising principles of co-design, co-creation and collaboration.

As well as engaging individuals in democratic processes, the EU must demonstrate its ability to listen to citizens and understand their concerns, moving away from the perception of an out of touch elite. JRC research in **online and social media monitoring and analysis** (for example, detecting emerging topics and related emotions), coupled to capabilities in **behavioural science**, **trend and survey analysis** could form a new integrated capacity to focus on citizens, to "take the pulse" on public opinion and to better understand how the media and individuals are reacting to events, issues and policy developments on an emotional level. This will help us to understand how policies are received by the public, to better shape future policy development and to craft effective communication strategies which are meaningful to everyone.

The JRC will also contribute to the conception of the **Conference on the Future of Europe** with insights from its work on citizen engagement and its Enlightenment 2.0 project, and to its implementation with analytical tools for analysing and presenting the contributions to the conference.

Better Regulation

The JRC aims to consolidate and expand its role in supporting key EU policymaking processes. In 2016, the JRC started to shift its focus towards knowledge and competence management and interdisciplinary thinking establishing knowledge centres, competence centres and a stronger foresight capacity. The competence centres serve to provide the Commission with tools, methods and advice in areas of JRC's core competences of

relevance to policymaking (in particular better regulation) such as foresight, micro-economic evaluation, indicators and scorecards. Knowledge centres serve to provide the Commission with integrated knowledge in thematic areas where there is a strong policy need for a coherent source of knowledge and where JRC has an established strong knowledge base.

Evidence needs to support all the three main phases of the EU policy cycle of *ex ante* impact assessment, monitoring and *ex post* evaluation. The JRC provides support to policy DGs on these main phases via three **competence centres**. The ex ante phase is supported by the **Competence Centre on Modeling**, which provides directions on models to use, supports transparency and homogeneity in baselines for impact assessments. The **Competence Centre on Foresight** provides strategic foresight insights and the **Competence Centre on Behavioural Insights** brings analysis on the behavioural dimensions of policies, on one side, and on the other, tests policy intervention measures. The monitoring phase is supported by the **Competence Centre on Indicators and Scoreboards**, which helps the construction of monitoring frameworks, develops and reviews composite indicators. The ex post evaluation phase is supported by the **Competence Centre on Microeconomic Evaluation**, which provides data-driven evaluation analysis and methodological support for evaluation.

The JRC has **first-class tools and methodologies for better regulation** (foresight, life cycle analysis, composite indicators, models, territorial analysis) which will contribute to the better regulation toolbox. The JRC is proposing new services to be made available to all interested Commission departments, for instance the **impact assessment and evaluation services**, a robust and fit-for-purpose performance indicator framework and improved access to and use of microdata held by (national) administrations for carrying out impact evaluations and ex post evaluations. Through its Competence Centres on Modelling, Microeconomic Evaluation and Composite Indicators and Scoreboards, the JRC cooperates closely with the Regulatory Scrutiny Board, the Secretariat-General, and DG Budget on improving quantification in impact assessment and evaluation processes.

Under the lead of the EU Policy Lab (which is part of the Commission Policymaking Hub), the JRC has built a design capacity and networked with leading policy labs in Europe and internationally, to support the use of foresight and a new empirical **design approach to policymaking.** The purpose is to better connect policymakers with those who are directly involved with the issue (e.g. individuals, businesses, government administrations) in a 'safe' space to co-design policy initiatives and future-proof impact assessments. The JRC explores how behavioural sciences, social sciences and humanities can bring new insights into our political behaviour, such as how and why emotions, values, identity and reason affect how we think, talk and take decisions on political issues.

Mainly through its Competence Centre on Foresight and more broadly with its quantitative and sectoral and knowledge management functions, the JRC will be well-placed to contribute to strategic foresight. The JRC will be co-drafting the **Commission strategic yearly foresight report** and providing the **secretariat to the Strategic foresight network**, chaired by the Commission's Secretariat-General and where all policy DGs are

represented. JRC tools, such as the JRC Megatrends Hub and the Horizon Scanning system, its newsletters, technology analysis and public opinion trends and sentiment analysis will be made available Commission-wide (Figure 4). In particular, the JRC has proposed a wealth of future-oriented stories that touch upon five main chapters: recovery from the current COVID-19 pandemic (socio-economic aspects), the middle class (future of welfare, work and skills), strategic independence (digital economy, Artificial Intelligence and data), Africa (growth and city perspective) and to some extent, security (digitalisation and relationship with China). To inform policymakers on emerging and less-noticed issues, the JRC is planning a new series of **high-profile reports** (flagship reports), and high-level briefings (e.g., with IDEA[11]), informed by its foresight activities, among others. The JRC will also provide support to policy DGs that can range from methodological advice to the co-design and running foresight studies and short foresight processes on demand. Progress will be measured by an indicator on policy impacts having a foresight component.
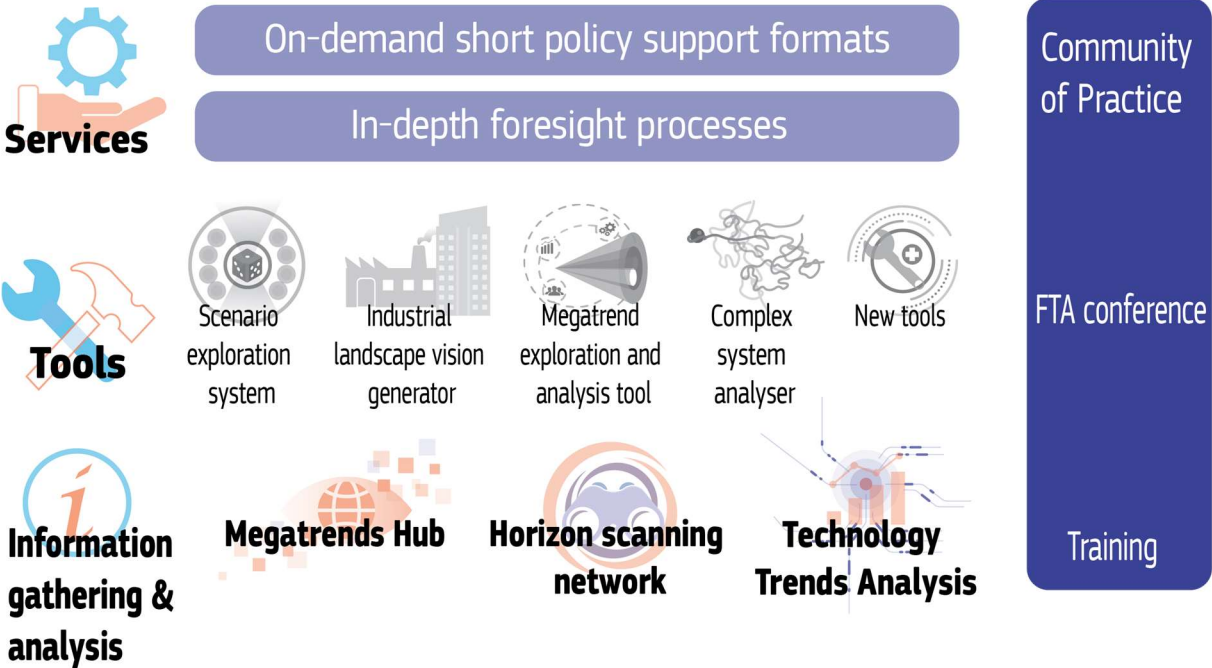
Figure 4. JRC's foresight tools in support of better regulation

The JRC will continue to provide tailored policy support through **knowledge centres**. Their communities of practice, developed over the last four years, will be expanded with experts from the Member States to make optimum use of available knowledge and expertise. At the same time it will design and refine collaboration methodologies to facilitate knowledge sharing and management, and other initiatives such as observatories.

Through its technical capabilities and extensive experience in **data and knowledge management** the JRC will ensure that the Commission remains at the forefront of corporate modernisation (see Part 2D). Within the framework of the Communication (C2016)6626 on Data, Information and Knowledge Management, the JRC will continue to

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[11] European Commission Service Departement – Inspire, Debate, Engage and Accelerate Action

set up capacity building and initiate other knowledge management services for the Commission. The JRC is also involved in bringing the Commission's vast datasets together and making them easiliy accessible to policymakers.

Specific objective 7.2: The JRC operates modern, sustainable and open research campuses

Unlike other DGs, the JRC owns and manages buildings and related infrastructure on all of its sites, except Brussels. Site management comprises all activities related to infrastructure development and maintenance, energy and water management, logistics, transport, safety, security and environmental protection. The JRC Strategy 2030 postulates 'an internationally recognised, modern, safe and secure infrastructure for the JRC, which creates a positive working environment'. Responding to this strategic goal, the JRC developed strategic site development plans, which articulate the following priorities: modern and fit-for purpose infrastructures including for office, scientific and social usage and supporting collaboration and outreach, as well as smart eco-friendly sites and efficient site services. An important indicator is the compliance with the energy efficiency and energy performance of buildings directives.

Examples of infrastructure construction during the period 2020-2024 include the completion of a new building for better separating laboratories and offices in Karlsruhe and a new access control and security centre in Petten. Major refurbishments will include the renewal of the tri-generation plant in Ispra.

Specific objective 7.3: The Commission has appropriate capacity to manage risks related to intellectual property rights and be compliant with the rules and regulations

The Commission creates or procures intellectual propery (IP) assets such as software, publications and pictures, often with the aim to allow reuse or distribution. Many of these assets require management, including risk management. Promoting knowledge of IP rules and practices, targeting in particular those responsible for the management of IP assets in the Commission services (e.g. middle management and authorising officers) will increase compliance with IP rules across the entire Commission.

The Commission's Central IP Service provided by the JRC, is the service responsible for coordination of the Commission's IP practices. During this four year period, it will continue the development of the recently introduced corporate platform for IP management (EURECA), and progressively incorporate Commission IP management processes within corresponding IT-assisted workflows. This corporate platform will allow each DG and Service to identify and manage their IP assets, including clearance thereof, thus facilitating IP risk management. After its introduction the aim is to organise training for 400 staff responsible for IP issues at different Commission departments to ensure harmonised IP practices.

EUROPEAN COMMISSION GENERAL OBJECTIVE 1:

European Green Deal

Implementing a safe, cost-effective and timely decommissioning of obsolete facilities and disposal of waste will contribute to demonstrate the safety, sustainability and reversibility of the life cycle of nuclear installations. The JRC's decommissioning and waste management activities will thus contribute to the goals of the European Green Deal, through safe use of nuclear energy and its positive **impact on greenhouse gas emissions as well as energy savings.**

Specific objective 1.1: The JRC progressively decommissions its disused nuclear facilities and safely disposes of its radioactive waste

Decommissioning and waste management are an integral part of the life-cycle of JRC's nuclear research facilities with the final aim of returning the land used to a 'green-field status'.

Activities have been carried since 1999 with a dedicated Commission budget line for the JRC, in the frame of a 'Nuclear Decommissioning and Waste Management Programme' (D&WMP) . In order to increase flexibility in resources and strengthen the monitoring and evaluation framework, a proposal for a Council Regulation defines a new instrument for these activities in the Multi-annual Financial Framework 2021-2027, the 'Nuclear Safety and Decommissioning Programme'. This proposal also covers the Commission's support to Bulgaria and Slovakia. The overarching objective for JRC is to gradually decommission all its nuclear installations after the end of their operational life, and dispose of all waste. JRC will also have a mandate to explore the conditions for an optional transfer of liabilities to the hosting Member States.

The D&WMP of the JRC is a long-term programme with intermediate milestones which often are beyond the time frame of the Strategic Plan. Most of the ongoing activities take place in Ispra, where most of the nuclear facilities ceased to operate before 1999 and where the activities cover a variety of installations and waste batches. In Karlsruhe, Petten and Geel no decommissioning of large installations is currently implemented because nuclear facilities are in operation to perform nuclear R&D in the frame of the EURATOM Research and Training programme.

During the 2020-2024 period, Ispra will remain the 'centre of gravity' of the D&WMP. The gradual shift from safe conservation and pre-decommissioning to relatively large decommissioning and waste management tasks will continue, enabled by the relevant authorisations and licenses released by the safety authority and by the start of the operation of new supporting facilities. By 2024, all waste treatment facilities in Ispra should be ready for operation. In Karlsruhe, the requalification and removal of legacy low

level waste and glove boxes and the optimisation of spent fuel inventories will continue. In Petten, a multi-year campaign to dispose of the nuclear material/waste batches owned by JRC will be launched. Contacts with Dutch counterparts, aiming at defining an effective frame for the future decommissioning of the High Flux Reactor, will continue. In Geel, an effort to reduce/optimise the inventories of nuclear materials owned by the JRC and to remove waste will be implemented in agreement with the licensing authority.

Specific objective 1.2: The JRC establish links and tools for nuclear decommissioning knowledge sharing and dissemination with stakeholders in the Member States

The new programme described in specific objective 1.1 aims to increase synergies between actions, and collect and make available collective experience to inform European nuclear energy industry and authorities of best practice, which is a task assigned to the JRC.

D. Key performance indicators

The key performance indicators have been chosen to measure three dimensions of the core business of the JRC, under Specific Objective 7.1:

- **Scientific excellence:** the proportion of peer-reviewed publications in the top 10% most-cited journals
- **Impact on policymaking:** Number of innovations and scientific results addressing specific EU policy priorities
- **Relevance:** level of customer satisfaction.

Details are given in the performance tables in Annex.

PART 2. Modernising the administration

The Commission and its services should lead by example in areas such as gender equality, digitalisation, collaborative working and sustainability. This part 2 describes the efforts that the JRC is making to modernise its way of working and to make the most efficient and effective use of resources. It covers the management of human resources, fraud risk, digital transition and information as well as sound financial and environmental management. In each of these areas, the Commission has corporate strategies to guide the work at local level.

The JRC has adopted modern, flexible, people-centred and effective human resource management practices which is also one of the objectives of the JRC Strategy 2030. It has built fit-for-purpose, cost-efficient, secure, sustainable and well-coordinated Information and Communication Technology (ICT Infrastructure). Efficiency and effectiveness will ensure that the annual budget will be met and facilitate the requirements of the strategy. All JRC sites are EMAS-registered since 2015.

As a modern public administration, the Commission implements an internal control framework inspired by the highest international standards. The Commission's system covers all the principles of internal control identified in the Committee of Sponsoring Organizations of the Treadway Commission 2013 Internal Control framework, including financial control, risk management, human resource management, communication and the safeguarding and protection of information. The JRC has established an internal control system tailored to its particular characteristics and circumstances and regularly assesses its implementation and overall functioning. This assessment is based on indicators, the most strategic of which are listed in this section of the strategic plan.

The JRC is progressively integrating the Internal Control framework (ICF) with its existing JRC Integrated Management system (IMS), which is based on the international standard ISO 9001. Such integration allows the JRC to combine requirements from different sources, such as ICF, ISO standards and legal requirements, in one management approach.

To promote scientific integrity and responsible conduct of research, the JRC is adopting in 2020 a 'research integrity framework' and will put in place the appropriate governance, supported by guidelines, training and counselling.

A. Human resource management

Objective: The JRC employs a competent and engaged workforce and contributes to gender equality at all levels of management to deliver effectively on the Commission's priorities and core business.

The JRC recruits, trains, motivates to retain highly qualified, talented and dedicated staff so that the effective and efficient operation of the DG is ensured, in line with the budgetary decisions.

To remain agile, adaptive and 'future-proof', the JRC will deploy its recruitment, talent management and career development programmes with a focus on strategically important

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competence areas also taking into consideration its high share of temporary scientific staff. The capacity of the instruments for attracting staff with new ideas (Centre for Advanced Studies, Exploratory Research, Collaborative Doctoral Partnerships) will be gradually expanded in terms of available positions.

To support gender equality in management, it will reinforce the promotion of management careers amongst its female AD population with JRC-specific initiatives, including awareness-raising, coaching and networking, thereby complementing corporate programmes.

Furthermore, the JRC will invest in strengthening the positive trend in staff engagement and nurture the high levels of staff well-being. This includes an active contribution to the implementation of corporate initiatives aiming at a healthy, fair, diverse and inclusive workplace. It also involves the promotion of leadership development opportunities for JRC managers, helping them engage with their staff, be sensitive to their staffs' well-being and to manage their own and their staffs' performance and development.

To ensure the effective management of human resources and to optimise the capacity to deliver on priorities in this strategic plan, the JRC will develop a local HR strategy with a medium to long-term outlook (3–5 years) consistent with the corporate HR strategy. The latter is being reviewed for incorporating further modernisation and leassons learnt from the COVID-19 pandemic.

Considering the COVID-19 lockdown experience, the JRC will put a particular focus on facilitating novel approaches to remote and team work, also supported by the roll-out of agile collaborative IT tools.

B. Sound financial management

Objective: The authorising officer by delegation has reasonable assurance that resources have been used in accordance with the principles of sound financial management, and that cost-effective controls are in place which give the necessary guarantees concerning the legality and regularity of underlying transactions

The Commission strives to achieve the highest standards of financial management. The European Court of Auditors has recognised in its 2018 Annual Report that 'the European Union now meets high standards of accountability and transparency when it comes to spending public money'. As the manager of the EU budget, much of this is due to the investment the Commission has made in putting in place rigorous controls and clear chains of accountability.

The Financial Regulation sets out a robust system of rules governing the use of financial resources entrusted to the Commission. The Authorising Officers are responsible for implementing revenue and expenditure in accordance with the principle of sound financial

management and for ensuring compliance with the requirements of legality and regularity[12].

To demonstrate its commitment to the best use of financial resources, the Commission has as a stable and strategic goal to achieve a very low error rate. The JRC has consistently achieved this goal over the duration of the last strategic plan and intends to maintain this rigorous approach and continue to exceed the expected targets related to economy, efficiency and effectiveness.

The financial services have been subject to increasingly stringent efficiency targets and such pressure will likely remain over the next five years. The priority for the JRC will therefore be to identify and implement new and innovative efficiency measures proportionate to the associated risks. These will include:

- further digitalisation of the procurement life-cycle,
- the adoption of less labour-intensive and faster processes for low risk operations.

The JRC will also substantially contribute to efficiency as the Business Domain Owner for the eProcurement Programme and through the adoption of its Public Procurement Management Tool (PPMT) by the Commission.

C. Fraud risk management

Objective: The risk of fraud is minimised through the application of effective anti-fraud measures and the implementation of the Commission Anti-Fraud Strategy (CAFS) aimed at the prevention, detection and correction of fraud.

The Commission's new anti-fraud strategy (CAFS)[13] highlights the need for continued vigilance against the risk of fraud. It focuses on protecting the EU's financial interests from fraud, corruption and other intentional irregularities and on the risk of serious wrongdoing inside the EU's institutions and bodies. The JRC is now revising its anti-fraud strategy (AFS) in accordance with the new CAFS two priority objectives: 'data collection and analysis' and 'coordination, cooperation and processes'. The AFS will have two lines of actions: the fight against fraud inside the JRC, and the support to OLAF.

The current JRC anti-fraud strategy (2017) is accompanied by an action plan covering 2018 to 2020, which has been evaluated with an evidence-based approach: for each objective and action, results and efforts have been carefully analysed by measuring output, outcome and impact. As a result, the JRC reinforced its anti-fraud component in its business processes, raised awareness among staff through training sessions and by implementing scientific integrity strategy actions. Following the reorganisation of ethics responsibilities at European Commission corporate level, internal and external roles and tasks have been

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[12] Art. 66(1) of the Financial Regulation.
[13] https://ec.europa.eu/anti-fraud/sites/antifraud/files/2019_commission_anti_fraud_strategy_en.pdf

clarified to enhance cooperation. In addition, each JRC process has been assessed on possible fraud risks as part of the annual risk assessment exercise.

Following this extensive work, and based on the outcome of a risk assessment exercise, the JRC has identified two business areas potentially most vulnerable to fraud: (i) public procurement and procurement contract management and (i) scientific and technical support to other Commission services and agencies, in particular knowledge production and management. The aim is to achieve a fully-fledged governance structure with clear roles and defined methodology for data analysis and information exchanges covering both financial and non-financial aspects. Tailored training courses will be provided to further reinforce the first line of defence, and equip the staff with appropriate capabilities. Scientific integrity guidance and tools will be embedded into scientific project management procedures to foster, promote and maintain an harmonised culture of scientific integrity. As a member of specific European Anti-Fraud Office subgroups, the JRC will also share its experience in data analysis and defining indicators. The JRCs experience will be particularly useful in the context of research, training, and management systems' integration.

The understanding of fraud-control problems and their translation to statistical patterns is at the core of the anti-fraud support provided by the JRC. The JRC is co-lead for several actions of the CAFS action plan[14]. For action 4[14], under CAFS objective 1 '**Data collection and analysis',** the JRC is extending existing tools (e.g. Contraffic, THESEUS) to provide a robust, scalable and adaptable analysis of big data. It is offering pan-European IT services, including relevant data repositories and inventories. With reference to action 22[14], related to CAFS objective 5 '**Transparency**', the JRC is leading a research track that aims at detecting manipulations of financial figures. Under objective 7 '**Fighting revenue fraud; Data collection and analysis**', CAFS action 45[14], the JRC is creating a wider analytical capacity in the form of a Competence Centre in Data Analysis and Robust Statistics (CC-DARS) to address new challenges (e.g. e-commerce, market surveillance, VAT fraud, trade-based money laundering). It will support the EU Joint Analytics Capabilities (JAC) and the Joint Customs Operations and test the approach, for example for the monitoring of the export of plastic waste and the trade of commodities of strategic importance for the COVID-19 pandemic[15].

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[14] https://ec.europa.eu/anti-fraud/sites/antifraud/files/2019_commission_anti_fraud_strategy_action_plan_en.pdf (SWD(2019) 170 final)

[15] The CC-DARS and the JAC have to be agreed respectively by the Commissioner and the EC services involved

D. Digital transformation and information management

Objective: The JRC is using innovative, trusted digital solutions for better policy-shaping, information management and administrative processes to forge a truly digitally transformed, user-focused and data-driven Commission.

The JRC digital transformation solutions will be in line with the 11 core principles defined by the EC Digital Strategy[16] and the corresponding modernisation plan.

A major project implementing it is the eProcurement programme for which the JRC is business domain owner. The aim of the programme is to provide a fully integrated, automated and paperless solution covering the whole eprocurement end -to- end process that will be available to the whole of the Commission. The eProcurement programme focuses on fulfilling two objectives:

- the SEDIA objective (to offer a single electronic data interchange area for grants and procurement for all EU institutions, Financial Regulation Art. 147 on eGovernment),
- the synergies and efficiencies (SER) objective (to ensure that the eProcurement tools are available to all Commission services by 2021).

The eProcurement programme will achieve the above objectives by building and rolling out to all EC services and other entities a new eProcurement solution. The new solution currently being built and already partially in production, is based on the proven practices and solid architecture of eGrants (Single Electronic Data Interchange Area (SEDIA) solutions, SYGMA & COMPASS[17]). The solution aims to be a fully integrated, automated and paperless solution covering the whole eprocurement end-to-end process, with a high user experience and full integration with the financial & accounting processes (ABAC workflow[18] and later SUMMA[19]).

In addition, the JRC seeks to implement a future-proof, end-to-end ICT architecture that defines capabilities aligned to business needs and supporting the JRC 2030 strategy in agreement with the corporate ICT governance principles. This architecture addresses the multiple challenging needs for a cost effective, fit for purpose, secure and well-coordinated ICT environment. A number of projects were defined consolidating/centralising ICT infrastructure services, improving further the ICT security and making available business centred services for the policy support work done by the JRC.

With the current wealth of data available, the potential for new discoveries, innovations and new correlations of data are immense. However, for this potential to be realised, and for

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[16] Communication to the Commission 'European Commission Digital Strategy 'A digitally transformed, user-focused and data-driven Commission', C(2018)7118
[17] H2020 IT tools
[18] EC Financial management tool
[19] SUMMA programme will replace ABAC, the corporate information and accounting IT tool

the JRC to live up to expectations and play a significant role in policymaking in the Commission, there is a need to have the right data practices, policies and infrastructure in place. To address this, in 2015 the JRC published a data policy[20] that apart from addressing transparency obligations and legal commitments is driven by the need to provide a basis for better management of data at the JRC. The JRC's new data governance structures were set up in June 2018 and consist of a Data Steering Board (DSB) and a Data Committee (DC) that are meant to ensure that the corporate data policies are applied throughout the JRC. To this extent, the JRC has already addressed some of the principles from the corporate data policies and via the JRC's data governance this work will continue over the next years to fulfil the objective.

The JRC has a strong capacity in managing and analysing data for policymaking. The JRC will contribute to the implementation of the corporate data strategy via, among others, the Information Management Steering Board work programme 2020-2021. The JRC will lead the setting up of a Data Advisory service that will ensure that the capacity available at the JRC will be more readily available for the benefit of the entire Commission.

An awareness raising campaign already started by the JRC data protection coordinator in 2018, will be continued. It will target all senior managers in 2020, all middle managers in 2021, and all JRC staff in 2022-2024, either through a mandatory training, or with directly addressed communication and a JRC guide on personal data protection.

E. Sound environmental management

Objective: The JRC takes full account of its environmental impact in all its actions and actively promotes measures to reduce the related day-to-day impact of the administration and its work.

The European Commission in Brussels was the first EU Institution to achieve an EMAS-registration[21] already in 2005. Since then, it has continuously strengthened its commitment to the fight against climate change and to the reduction of its environmental impact. The JRC sites were successively brought under the Commission's EMAS regime during 2013 – 2015.

The JRC will promote the EMAS corporate campaigns at local level and identify local environmental actions to support the Commission's commitment to implement the objectives of the Green Deal for its own administration, including becoming climate neutral by 2030, where possible (due to the experimental and semi-industrial activities such as nuclear decommissioning, conducted at some of the sites, these will not be able to achieve full climate neutrality by 2030). The measures will include:

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[20] https://ec.europa.eu/jrc/en/about/jrc-in-brief/data-policy

[21] **EU Eco-Management and Audit Scheme (EMAS)** is a premium management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance. EMAS is formalised in Regulation (EC) No 1221/2009 ('EMAS III')

- reduction of energy consumption in buildings, including through the application of EU directives regarding energy efficiency and nearly zero-energy buildings, and through staff awareness,
- gradual replacement of fossil energy production with renewable energy sources, where possible,
- reduction of water consumption and of office paper through technical measures, changes in processes and awareness raising,
- increasing the circularity in waste management,
- reduction of emissions from mobility (on-site and from commuting) through e.g. changes to the car fleet in Ispra, and
- enhancing the application of green public procurement, through design, monitoring and evaluation

In particular, the JRC aims to increase its surface area of buildings compliance with energy efficiency standards by 3% by 2024.

In its strategic site development plans 2030, the JRC has set a vision for progressively greening its sites, by substituting fossil energy sources with renewables, reducing energy consumption by applying efficiency measures, maximising waste circularity and promoting sustainable transport. The actions deriving from the JRC's strategic site development plans feed into the Commission-wide EMAS objectives, in particular regarding energy efficiency and reduction.

ANNEX: Performance tables

Part 1. Delivering on the Commission's priorities

General objective 7: A modern, high performing and sustainable European Commission

General objective 7: **A modern, high-performing and sustainable European Commission**		
1. **Impact indicator**: **Image of the European Union** **Explanation:** This indicator is based on the question 'In general, does the EU conjure up for you a very positive, fairly positive, neutral, fairly negative or negative image?' The indicator gives the share of positive and fairly positive views on this question. **Source of the data**: Eurobarometer		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
43%	Increase	Increase

Specific objective 7.1: The JRC supports evidence-informed policymaking through creating and managing high-quality and fit-for-purpose scientific knowledge	Related to spending programme(s): Horizon 2020, Horizon Europe	
Result indicator: Proportion of peer-reviewed publications in the top 10% most-cited journals		
Explanation: The number of publications in the top 10% most-cited journal is proxy for scientific excellence. The value is based on data over four years. The target value is based on data 2015-2019.		
Source of data: Abstract and citation database of peer-reviewed literature Scopus®		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
46%[23]	>40%	>40%
Result indicator: Field-weighted citation index of peer-reviewed publications		
Explanation: A citation allows to acknowledge the relevance of a given publication to the research topic, which is a proxy for the impact on scientific research. This indicator is part of the Horizon Europe key impact pathway 'scientific impact'.		
Source of data: Abstract and citation database of peer-reviewed literature (Scopus®)[22] – Horizon Europe indicator		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
2[23]	>2	>2

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[22] https://www.scival.com/overview/citations?uri=Institution/700960

[23] Data extracted on 31/08/2020

Result indicator: **Number of innovations and scientific results addressing specific EU policy priorities**		
Explanation: This is part of the Horizon Europe key impact pathway 'societal impact' and measures effectiveness of the JRC's research through the number of policy-related outcomes (policy impact; annual values).		
Source of data: JRC records of evidence of use and effects..		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
340	> 300	> 300
Result indicator: **Level of satisfaction with JRC's science services**		
Explanation: This is a proxy for the effectiveness of JRC's science service. It is based on a survey to partner DGs. The indicator refers to the average proportion of satisfactory or higher results on a set of questions		
Source of data: JRC customer survey		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
88%[24]	>80%	>80%
Result indicator: **Level of satisfaction with timeliness of science services**		
Explanation: This is a proxy for efficiency of the JRC's science service. It is based on a survey to partner DGs. The indicator refers to the proportion of satisfactory or better results.		
Source of data: JRC customer survey.		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
86%	> 80%	> 80%

Specific objective 7.2: The JRC operates modern, sustainable and open research campuses	Related to spending programme(s): Horizon Europe	
Result indicator: **Proportion of surface area compliant with energy standards**		
Explanation: Surface area of new buildings delivered and buildings demolished and refurbished in line with Directive 2012/27/EU at the JRC sites in Geel (Belgium), Petten (Netherlands), Seville (Spain), Karlsruhe (Germany), and Ispra (Italy), in line with JRC Strategy 2030 and associated Site Development Plans.		
Source of data: JRC internal indicator and Directive 2012/27/EU		
Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
Geel: 29 423 sqm (74.3% of built surface area) not compliant with energy standards according to Directive 2012/27/EU.		Increase of 3% of surface compliant with energy standards
Ispra: 98 661 sqm (61% of built surface area) not compliant with energy standards according to Directive 2012/27/EU.		Increase of 3% of surface compliant with energy standards

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[24] This value is based on a limited sample

Karlsruhe: 31 637 sqm (77% of built surface area) not compliant with energy standards according to Directive 2012/27/EU		Increase of 3% of surface compliant with energy standards
Petten: 19 981 sqm (100% of built surface area) not compliant with energy standards according to Directive 2012/27/EU		Increase of 3% of surface compliant with energy standards
Seville: 7 698 sqm (100% of built surface area) not compliant with energy standards according to Directive 2012/27/EU		+3% p (pending confirmation from the landlord)

Result indicator: Proportion of buildings compliant with zero-energy standards

Explanation: Implementation of Energy Performance of buildings Directive 2010/31/EU

Source of data: JRC internal indicator and Directive 2010/31/EU

Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
Geel: 0 sqm (0 % of total built surface area)		
Ispra: 2 522 sqm (1.56% of total built surface area)	Improve	After 2018, all new buildings constructed on JRC sites should be 'nearly zero-energy buildings' in line with Directive 2010/31/EU article 9 paragraph 1 (b).
Karlsruhe: 0 sqm (0 % of total built surface area)	n.a.	
Petten: 0 sqm (0 % of total built surface area)	Improve	
Seville: 0 sqm (0 % of total built surface area)	n.a. (JRC does not own the building)	

Specific objective 7.3: The Commission has appropriate capacity to manage risks related to intellectual property (IP) rights and be compliant with the rules and regulations	Related to spending programme(s): Horizon Europe

Result indicator: Proportion of DGs introducing IP assets in EURECA

Explanation: Use of the IT platform will increase identification and clearance of IP assets

Source of data: EURECA IT platform

Baseline (2019)	**Interim milestone** (2022)	**Target** (2024)
0	70%	100%

General objective 1: European Green Deal

General objective: **A European Green Deal**

1. Impact indicator: **Greenhouse gas emissions**

Explanation: This indicator measures man-made emissions of the so-called 'Kyoto basket' of greenhouse gases, which are integrated into a single indicator expressed in units of CO_2 equivalents using each gas' global warming potential. It shows changes in percent of the emissions compared to 1990 levels

Source of the data: European Environmental Agency (Eurostat online data code: sdg_13_10)

Baseline (2017)	Interim milestone (2020)	Target (2030)
-19.0%	-20%	-55%

6. Impact indicator: **Primary energy consumption**

Explanation: Primary energy consumption covers the energy consumption by end users such as industry, transport, households, services and agriculture, plus energy consumption by the energy sector itself for the production and transformation of energies, losses occurring during the transformation of energies (for example, the efficiency of electricity production from combustible fuels) and the transmission and distribution losses of energy. Expressed in million tonnes of oil equivalent (MTOE)

Origin of indicator: Energy Efficiency Directive 2012/27/EU, amended by Directive (EU) 2018/2002; EU Sustainable Development Goal indicator

Source of the data: Eurostat (Eurostat online source code: sdg_07_10)

Baseline (2017)	Interim milestone (2020)	Target (2030)
1,562 MTOE	1,483 MTOE	1,273 MTOE

Specific objective 1.1: The JRC progressively decommissions its disused nuclear facilities and safely disposes of its radioactive waste	Related to spending programme(s): EURATOM (until end 2020), Nuclear Safety and Decommissioning (proposed to start in 2021)

Result indicator: **Progress in finalisation of waste treatment routes and waste management facilities in Ispra**

Explanation: This indicator measures the fraction of the waste management facilities and waste treatment contracts available for use in Ispra.

Source of data: JRC internal

Baseline (2019)		Interim milestone (2022)		Target (2024)	
44%		77%		100%	

Result indicator: **Progress of characterisation and removal of legacy Low Level Waste (LLW) at JRC Karlsruhe**

Explanation: This indicator measures the quantity of legacy LLW characterised and removed

Source of data: Internal.

Baseline (2019)		Interim milestone (2022)		Target (2024)	
		Declaration	Removal	Declaration	Removal
0%		60%	50%	85%	75%

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Result indicator: Progress of waste management and removal in JRC Petten

Explanation: This indicator measures the amount of waste/materials removed from the site (excluding waste from the decommissioning of the High Flux Reactor in Petten)

Source of data: JRC internal

Baseline (2019)	Interim milestone (2022)	Target (2024)
0	30%	60%

Result indicator: Progress of materials/waste management and removal in JRC Geel

Explanation: This indicator measures the amount of waste/materials removed from the site

Source of data: JRC internal

Baseline (2019)	Interim milestone (2022)	Target (2024)
0	10%	50%

Result indicator: Proportion of budget consumption according to the decommissioning budget line planning

Explanation: Progress of the decommissioning programme in terms of commitment budget consumed in Ispra and Karlsruhe. Measurement unit is % of the remaining planned decommissioning funds (up to the end of the programme)

Source of data: JRC internal

Site	Baseline (2019)	Interim milestone (2022)	Target (2024)
Ispra	0	11%	20%
Karlsruhe	0	4%	7%

Specific objective 1.2: The JRC establishes links and tools for nuclear decommissioning knowledge sharing and dissemination with stakeholders in the Member States	Related to spending programme(s): EURATOM (ntil end 2020), Nuclear Safety and Decommissioning (proposed fto start in 2021)

Result indicator: Initiatives on decommissioning knowledge and experience dissemination

Explanation: This indicator measures the progress in the dissemination of knowledge and experience in nuclear decommissioning. Measurement unit is related to the achievement of pre-defined milestones.

Source of data: JRC internal

Baseline (2019)	Interim milestone (2022)	Target (2024)
Preliminary concept for a knowledge dissemination centre.	Platform for dissemination of knowledge and experience in decommissioning operational	Established set of initiatives and network of partners/contributors

Part 2. Modernising the administration

A. Human resource management

Objective: The JRC employs a competent and engaged workforce and contributes to gender equality at all levels of management to effectively deliver on the Commission's priorities and core business	
Indicator 1: Number and percentage of first female appointments to middle management positions **Source of data: DG HR**	
Baseline (01/12/2019)	**Target** (2022)
14 female middle managers (22%)	11 appointments by 31/12/2022[25]
Indicator 2: JRC staff engagement index **Source of data:** Commission staff survey [data to be provided by DG HR]	
Baseline (2018)	**Target** (2024)
68%	Increase, at or above Commission value

B. Sound financial management

Objective: The authorising officer by delegation has reasonable assurance that resources have been used in accordance with the principles of sound financial management, and that cost-effective controls are in place which give the necessary guarantees concerning the legality and regularity of underlying transactions	
Indicator 1: Estimated risk at closure **Source of data:** DG BUDG and internal reports	
Baseline (2019)	**Target** (2024)
< 0.5%	< 2% of relevant expenditure
Indicator 2: Degree of implementation of the monitoring and reporting action plan for an efficient integration of the Internal Control system within the JRC Integrated Management System **Source of data:** Internal control monitoring criteria with the annual internal control system assessment	
Baseline (2019)	**Target** (2024) 100 %
0 %	100%

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[25] SEC(2020) 146 – the target will be reivsed and extended for the period 2023-2024 by January 2023

C. Fraud risk management

Objective: The risk of fraud is minimised through the application of effective anti-fraud measures and the implementation of the Commission Anti-Fraud Strategy[26] aimed at the prevention, detection and correction[27] of fraud	
Indicator: Implementation of the actions included in the JRC anti-fraud strategy over the whole strategic plan lifecycle	
Source of data: The JRC annual anti-fraud strategy implementation report, OLAF reporting	
Baseline (2019)	**Target** (2024)
0%	100% of action points implemented in time

D. Digital transformation and information management

Objective: The JRC is using innovative, trusted digital solutions for better policy-shaping, information management and administrative processes to forge a truly digitally transformed, user-focused and data-driven Commission		
Indicator 1: Degree of implementation of the digital solution modernisation plan[28]		
Source of data: JRC internal indicator		
Baseline (2018)	**Interim milestone** (2022)	**Target** (2024)
38%	64%	85%
Indicator 2: Percentage of JRC's key data assets for which corporate principles for data governance have been implemented		
Source of data: JRC internal indcator		
Baseline 2019	**Interim milestone** (2022)	**Target** (2024)
35%	70%	100%
Indicator 3: Percentage of staff attending awareness raising activities on data protection compliance		
Source of data:		
Baseline (2018)	**Interim milestone** (2022)	**Target** (2024)
0%	70%	100% of staff

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[26] Communication from the Commission 'Commission Anti-Fraud Strategy: enhanced action to protect the EU budget', COM(2019) 176 of 29 April 2019 – 'the CAFS Communication' – and the accompanying action plan, SWD(2019) 170 – 'the CAFS Action Plan'.

[27] Correction of fraud is an umbrella term, which notably refers to the recovery of amounts unduly spent and to administrative sanctions.

[28] The European Commission Digital Strategy (C(2018)7118) calls on Commission services to digitally transform their business processes by developing new innovative digital solutions or make evolve the existing ones in line with the principles of the strategy. At the beginning of the year N+1, the Solution Owner and IT Investments Team will assess the progress made on the basis of the proposed modernisation plan. For each of the 3 solutions, a table will reflect – per principle – the progress achieved during the last year.

Indicator 4: **Degree of implementation of the eProcurement solution**		
Source of data: JRC internal indicator		
Baseline	**Interim milestone**	**Target**
(2018)	(2022)	(2024)
10%	35%	90%

Indicator 5: **Degree of implementation of the JRC ICT architecture**		
Source of data:		
Baseline	**Interim milestone**	**Target**
(2018)	(2022)	(2024)
10%	50%	100%

E. Sound environmental management

Objective The JRC takes full account of its environmental impact in all its actions and actively promotes measures to reduce the related day-to-day impact of the administration and its work		
Indicator 1: Sustainability in the Commission		
Five JRCs sites participating in Eco-Management and Audit Scheme (EMAS) on specific core parameters. These are Geel (Belgium), Petten (Netherlands), Seville (Spain), Karlsruhe (Germany), and Ispra (Italy).		
Source of data: Environmental Statement		
Baseline	**Interim milestone**	**Target**
(2018)	(2020)	(2024)
Energy consumption of buildings (MWh / person):		
Petten 10.1%	-5%	Achieve greater reduction
Geel 3.7%	-5%	
Seville -24.7%	-5%	
Karlsruhe 14.1%	-8%	
Ispra -4.9%	-5.6%	
Water use (m³ / person):		
Petten -28.2%	-5%	
Geel -16.6%	-5%	Achieve greater reduction
Seville -32.6%	-5%	
Karlsruhe -9.1%	-5%	
Ispra 8.8%	-5%	
Office paper consumption (sheets / person / day):		
Petten -39.4%	-9%	Achieve greater reduction
Geel -35%	-5%	
Seville 1.7%	-5%	
Karlsruhe -39.4%	-20%	
Ispra -26.2%	-20%	
CO_2 emissions from buildings (tonnes / person):		
Petten -69,6%	-7%	
Geel -74%	-5%	Achieve greater reduction
Seville -26.2%	-5%	
Karlsruhe 11.1%	-5%	
Ispra -5.3%	-5.6%	

Non hazardous waste generation (tonnes / person):			
Petten	9.3%	-5%	
Geel	-39%	-5%	Achieve greater reduction
Seville	40.6%	-5%	
Karlsruhe	-20.1%	-5%	
Ispra	11.1%	NA	