



Work Programme 2023–2024

Joint
Research
Centre

**European Commission
Joint Research Centre**

JRC Work Programme 2023–2024

This document provides information about the JRC Work Programme 2023–2024 and the specific position of portfolios within the structure of the work programme. The document includes 33 individual portfolio sections that provide information about the work, aim and objectives of the individual portfolios.

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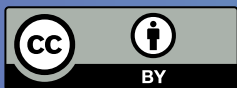
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Science for policy
JRC portfolios

Foreword

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting European Union policies to positively impact society. As a Department of the European Commission, the JRC plays a key role at multiple stages of the policy cycle.

The European Commission has set its ambition high in how Europe should respond to planetary challenges, climate change and ecosystem degradation, the digital acceleration, changing demographics, shifting human geography and the future of work, all against a rapidly evolving geopolitical context.

Europe needs to build its own resilience, and to do so at a time when we are dealing with the effects of Russia's war of aggression in Ukraine and the interconnected new geopolitical reality. Operating at the interface between science and policy, the JRC wants to strengthen its capacity to be a strategic partner in helping to identify solutions to such challenges.

In our 2023–2024 Work Programme, we support the Commission's political priorities and many initiatives included in the Commission 2023 work programme and contribute to the implementation of the Horizon Europe and Euratom research and training programme.

Our 33 portfolios are the main building blocks of our 2023–2024 Work Programme. They allow us to better integrate our work across scientific and policy domains in order to maximise support for anticipating new challenges, developing policies and monitoring their implementation and impact.

The portfolios will support policymakers in a more coordinated way to respond to the complex, increasingly interrelated and sometimes unprecedented challenges that Europe is facing. Working in partnerships inside and outside the European Commission, we will help anticipate solutions. We help the Commission assess the impact of EU policies and initiatives. We dedicate significant efforts to sharing best practices and organising training events in Member States, regions, and with our international partners.

We are committed to strengthen the role of the JRC at the service of the European project. With the 2023–2024 Work Programme we aim to demonstrate progress against this ambition. I am therefore happy to share this summary of our work programme and our portfolios with you.

Stephen Quest
Director-General

The JRC Work Programme 2023–2024 focuses on ► **prioritisation**, the ► **core strengths** of the JRC – anticipation, integration and impact of EU policies, and ► **scientific excellence**.

HORIZON EUROPE

EURATOM

It allows us to **anticipate** what is coming at us, beyond the latest crisis to be able to provide the scientific underpinning for future policy initiatives.

It **integrates** the JRC's work across scientific and policy domains, and builds links between the different scientific and policy areas inside the Commission and beyond, since the challenges we face are so complex that one single area of science can rarely provide all the necessary answers.

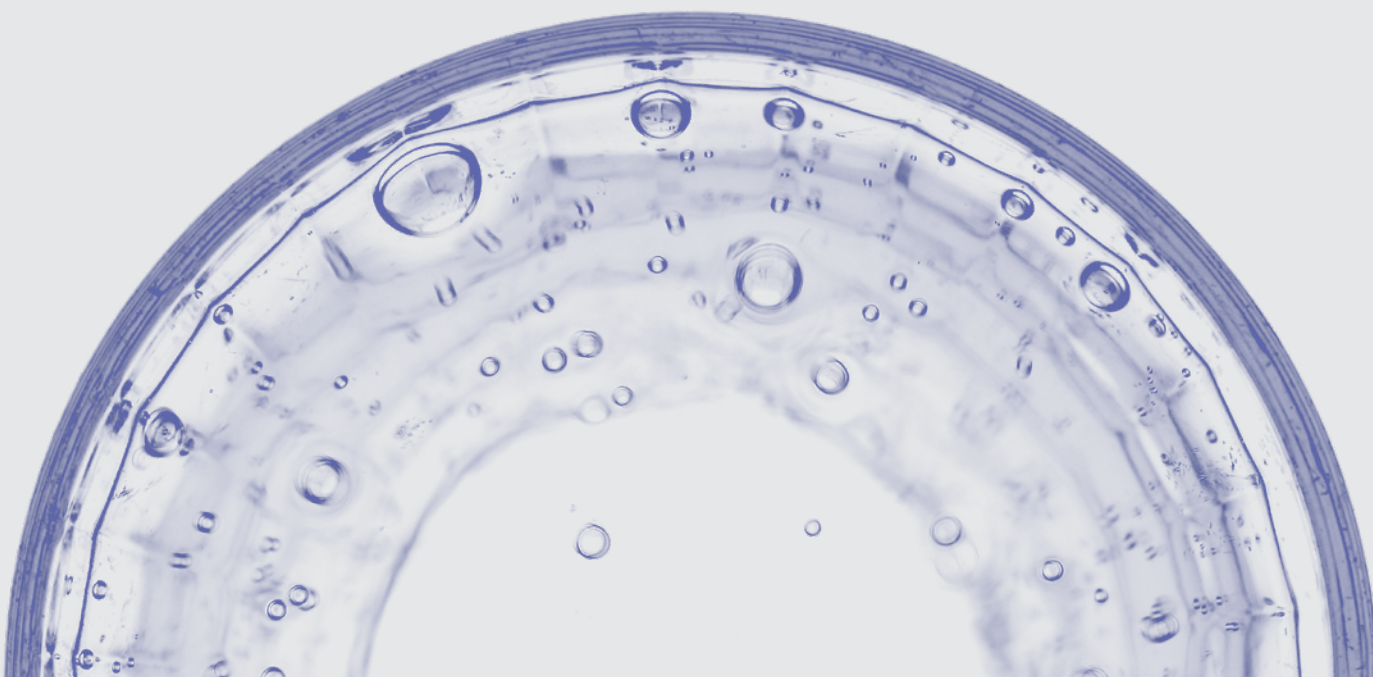
It assists policymakers to track and assess the **impact** of their policies.

It strengthens ► **partnerships** with Commission services and with external stakeholders, such as Member States, European agencies, international organisations, and research institutes.

EUROPEAN COMMISSION PRIORITIES

It supports the ► **Commission's political priorities** and multiple initiatives included in the ► **Commission Work Programme 2023** with its 33 portfolios.

- A European Green Deal
- A stronger Europe in the World
- A Europe fit for the digital age
- Promoting our European way of life
- An economy that works for people
- A new push for European democracy



JRC PORTFOLIOS 2023–2024

01

SHAPING THE GREEN TRANSITIONS FOR A SUSTAINABLE AND FAIR EUROPE

p. 6

02

SUSTAINABLE, CLEAN, INNOVATIVE AND COMPETITIVE ENERGY SOLUTIONS

p. 8

03

CLEAN HYDROGEN AND OTHER DECARBONISED GASES

p. 10

04

SAFETY OF NUCLEAR TECHNOLOGY IN SUPPORT OF THE TRANSITION TOWARDS CLIMATE NEUTRALITY

p. 12

05

SMALL MODULAR REACTORS

p. 14

06

DECARBONISED, SMART AND SAFE MOBILITY

p. 16

07

CITIES AND BUILDINGS FOR BETTER LIVES

p. 18

08

PATHWAYS TO CLIMATE NEUTRALITY: THROUGH LOW-CARBON ENERGY AND LAND-USE MANAGEMENT

p. 20

09

ZERO POLLUTION FOR PLANETARY HEALTH - INTEGRATED RESPONSES

p. 22

10

HEALTHY BIODIVERSITY AND NATURAL CAPITAL ACCOUNTING

p. 24

11

TRANSITION TO SUSTAINABLE FOOD SYSTEMS IN A EUROPEAN AND GLOBAL CONTEXT

p. 26

12

SUSTAINABLE MATERIALS AND PRODUCTS FOR A CIRCULAR AND RESILIENT EUROPE

p. 28

13

INDUSTRIAL TRANSFORMATIONS FOR SUSTAINABILITY, COMPETITIVENESS AND OPEN STRATEGIC AUTONOMY

p. 30

14

MONITORING AND SHAPING THE DIGITAL TRANSITION

p. 32

15

TRUSTWORTHY ARTIFICIAL INTELLIGENCE FOR A FAIR AND DEMOCRATIC EUROPE

p. 34

16

CYBERSECURITY OF SOCIETY AND INDUSTRY

p. 36

17

EXPLOITING DATA AS A STRATEGIC RESOURCE FOR SCIENCE AND POLICY

p. 38

18

OBSERVING THE EARTH FOR POLICY

p. 40

19

GALILEO NEXT GENERATION AND SECURE CONNECTIVITY

p. 42

20

TOWARDS AN INCLUSIVE AND RESILIENT SOCIETY: SOCIAL JUSTICE AND FAIR TWIN TRANSITIONS

p. 44

21

EDUCATION, SKILLS AND EMPLOYMENT FOR A FAIR TWIN TRANSITION

p. 46

22

ECONOMIC GOVERNANCE AND STRUCTURAL REFORMS

p. 48

23

TERRITORIAL INTELLIGENCE FOR EU POLICIES

p. 50

24

SCIENCE FOR THE GLOBAL GATEWAY AND THE INTERNATIONAL GREEN DEAL

p. 52

25

ENHANCED SITUATIONAL AWARENESS FOR CRISIS MANAGEMENT

p. 54

26

UNDERSTANDING AND ACTING ON FUTURE RISKS AND OPPORTUNITIES

p. 56

27

BETTER PREPAREDNESS AND RESPONSE TO HEALTH CRISIS

p. 58

28

INNOVATION IN LIFE AND HEALTH SCIENCES

p. 60

29

TACKLING CANCER AND OTHER NON-COMMUNICABLE DISEASES

p. 62

30

SCIENCE FOR SECURITY

p. 64

31

SUPPORT TO NUCLEAR COMPLIANCE ASSURANCE

p. 66

32

CHALLENGES AND OPPORTUNITIES OF POPULATION DYNAMICS AND MIGRATION

p. 68

33

INNOVATIVE POLICYMAKING IN A COMPLEX WORLD: SCIENCE, FORESIGHT AND EVALUATION FOR POLICYMAKING AND DEMOCRACY

p. 70

SHAPING THE GREEN TRANSITIONS FOR A SUSTAINABLE AND FAIR EUROPE



Green transitions foster welfare and well-being through a new sustainable economic model, while ensuring socio-economic systems remain within ecological planetary boundaries. Current production and consumption patterns are unsustainable and integrated actions are needed to shift towards sustainability. An integrated systems approach, promoted by the European Green Deal, helps evaluate the fulfilment of environmental targets, while considering the socio-economic context. It supports policy coherence and complementarity, and can test green transition policy options to maximise positive impacts.

The portfolio aims to:

Quantify progress towards the European Green Deal goals and targets across all EGD domains addressing impacts and benefits within and beyond EU borders

Identify how we can best address synergies, trade-offs, and gaps in policies via integrated approaches and life cycle assessment of value chains

Identify what needs to be done to deliver a truly green and regenerative economy, that gives back to the planet more than it takes remaining within planetary boundaries, in a socially inclusive, fair and just manner

01

Time frame

The main **short-term ambition** of this portfolio is to provide a gap analysis of Green Deal policies as a legacy document to serve as input with a **longer-term added value** (for the next Commission). This flagship document should be **delivered by mid-2024**, to be effective as a major driver for the 2025-2029 Commission.



Delivering on anticipation, integration and impact of EU policies

- ▶ developing guidance for the integrated assessment of green transitions and helping create consistency in definitions of sustainability and assessment,
- ▶ further developing life cycle assessment-based approaches to address transitions related to supply chains related transitions in an integrated and holistic manner,
- ▶ analysing of drawbacks, barriers and gaps for green transitions, 'best practices' and 'successful cases',
- ▶ providing integrated methodologies and conceptual frameworks to help anticipate and support the development and use of sustainability principles and criteria, such as those of the EU taxonomy, the safe and sustainable by design of chemicals and materials, etc.,
- ▶ developing data, indicators, and other evidence, based on models, foresight and other methods, observations and tools to support the design, implementation, and monitoring of European Green Deal policies.

Green transitions

Sustainable Development Goals

Bioeconomy

Blue Economy

Taxonomy & EU financial instruments

EGD Gap analysis

Consumption footprint

Life cycle assessment for policy

Farm2Fork

Green claims

Biomass

Primary production

Forests

Forestry

Forest sector

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, ECFIN, EMPL, ENER, ENV, ESTAT, FISMA, GROW, INTPA, MARE, MOVE, NEAR, REGIO, RTD, SANTE

Selected stakeholders

ECHA, EEA, EFSA, FAO, OECD, UN, UNEP, UNESCO, UN HABITAT

SUSTAINABLE, CLEAN, INNOVATIVE AND COMPETITIVE ENERGY SOLUTIONS



The production and use of energy account for more than 75% of the EU's greenhouse gas emissions. Its successful transition to carbon neutrality is key to delivering the European Green Deal objectives and the associated policy targets as expressed in REPowerEU, Fit for 55, the European Climate Law, the updated RED directive and the Energy Union Governance regulation. Good solutions require a holistic understanding of the interlinked and sometimes conflicting issues that can arise in the deployment of climate-neutral energy solutions, energy market design, the introduction of new technologies, materials supply, and the planning of new infrastructure. Only an integrated approach allows us to help policymakers to anticipate future challenges and ensure the implementation of resource-efficient decarbonised pathways.

The portfolio aims to:

Deliver an integrated and holistic approach to address the multiple complex issues related to the energy transition

Anticipate the challenges and solutions for an EU society running largely on climate-neutral energy sources

Assess solutions for renewable energy deployment and system integration and evaluate the associated value chains and their socio-economic implications

Time frame

02

This portfolio will support policy initiatives under REPowerEU, Fit for 55, the European Climate Law and the Energy Union Governance regulation with a **time horizon up to 2030**, including the increase of the EU RES target to 50 %, and investments in adapted gas and electricity networks. In a **short run**, it will also monitor implementation through the annual Competitiveness Progress Report and report on the National Energy and Climate Plans.



- Energy solutions
- Energy markets
- Energy storage
- Electricity supply and demand
- Clean energy solutions
- Renewables
- Photovoltaics
- Climate-neutral energy sources
- Resilience
- Energy infrastructure
- Low-carbon energy industries
- Critical clean energy value chains
- Energy security
- Bioenergy
- Clean Energy Competitiveness
- National Energy and Climate Plans

Delivering on anticipation, integration and impact of EU policies

- ▶ provide evidence about the impact of the short-term emergency measures to be adopted in the energy markets,
- ▶ support to the effective system integration of climate-neutral resources and storage and evaluation of the associated value chains and their socio-economic implications,
- ▶ Identification of the future energy infrastructure needed for the transition including a consideration of resource efficiency and systemic resilience,
- ▶ promotion of EU leadership in low-carbon energy industries through innovation and competitiveness, as well as the resilience of the associated materials and components value chains,
- ▶ help to ensure the security of electricity supply by developing frameworks and criteria for resilience.

MAIN PARTNERS

European Commission's departments
CLIMA, COMP, DEFIS, EEAS, EMPL, ENER, ENV, GROW, MARE, MOVE, RTD

Selected stakeholders
ACER, CEN, CENELEC, ETSI, IEA, IEC/ISO, IRENA

CLEAN HYDROGEN AND OTHER DECARBONISED GASES



In some high-energy demand sectors (such as parts of transport and industry) it is hard to decarbonise energy consumption by direct electrification. For these sectors, decarbonised gases and liquids can do the job, with renewable and possibly low-carbon hydrogen playing a pivotal role as feedstock and fuel. However, markets for decarbonised gases are not fully developed and there are policy and technology-related challenges including questions on energy efficiency, environmental impacts, and the possible intensification of water stress. The transition towards a mature infrastructure supplying decarbonised gases and liquids to users is complex and should take into account the need to guarantee security of energy supply. A coherent approach based on sound technical assessments can support the best solutions and can ensure the fulfilment of the 'energy efficiency first' principle.

The portfolio aims to:

Provide a coordinated, harmonised approach to address sustainable production, transport, storage and use of hydrogen and decarbonised molecules including hydrogen-derived liquid fuels

Assess market arrangements, research and innovation and standardisation, circularity options, infrastructure and security of supply of decarbonised gases and liquid fuels

Develop methods for the assessment and certification of green-house gas emissions and environmental footprint, as well as benchmarks against other options for decarbonisation

03

Time frame

The portfolio supports the EU policy goals in the field, with a **time horizon of 2030** for those captured under the REPower EU plan and a **mid-decade perspective** for the goals put forward by the Directive and Regulation on decarbonised gases and the Regulation on Security of Gas Supply.



Hydrogen

Greenhouse gas emission

Decarbonised gases

Renewable energy sources

Hydrogen and nuclear

Decarbonised transport

Decarbonised industry

Harmonised gas markets

Technology progress

Energy security

Energy efficiency

Low carbon hydrogen production

Transport of hydrogen

Storage of hydrogen

Critical raw materials and circularity

Delivering on anticipation, integration and impact of EU policies

- ▶ harmonising methods for assessing competitiveness, sustainability and 'energy efficiency first' principle of renewable and low carbon hydrogen and hydrogen-derived liquid fuels production and use,
- ▶ assessing the best options for the transport and storage of hydrogen in terms of safety, sustainability, energy and economic efficiency,
- ▶ analysing the effects of adding decarbonised gases to new and repurposed gas networks, possible associated market fragmentation and impacts on energy security,
- ▶ providing a coordinated approach to address the security of renewable and low-carbon hydrogen supply,
- ▶ monitoring and assessment of technological progress, including material criticality and water availability aspects.

MAIN PARTNERS

European Commission's departments

CLIMA, COMP, EEAS, ENER, ENV, GROW, INTPA, MARE, MOVE, REFORM, RTD

Selected stakeholders

ACER, Clean Hydrogen Joint Undertaking, Hydrogen Europe, CEN, CENELEC, IEC, IEA, IPHE, ISO

SAFETY OF NUCLEAR TECHNOLOGY IN SUPPORT OF THE TRANSITION TOWARDS CLIMATE NEUTRALITY



The EU aims to be climate-neutral by 2050, becoming an economy with net-zero greenhouse gas emissions. This objective is at the heart of the European Green Deal and in line with the EU's commitment to global climate action under the Paris Agreement. Through the Taxonomy Regulation Complementary Delegated Act, the Commission has concluded that nuclear energy, subject to strict safety and environmental conditions, can play a role in the transition towards climate neutrality in line with the Green Deal. This is also a practice of some EU Member States. It encourages the development and improvement of safety standards for nuclear technologies, including advanced waste-minimising technologies and new nuclear energy generation projects.

The portfolio aims to:

Provide scientific evidence on the safety and sustainability of evolutionary nuclear energy technologies, including radioactive waste management and disposal

Contribute to a continuous update and improvement of the technical screening criteria for nuclear energy as a climate neutral energy system

Maintain Europe's nuclear technology leadership in nuclear safety while fostering autonomy of energy supply and economic growth

04

Time frame

This portfolio ensures continuity between **short- and long-term research** and competences in the context of the energy transition and decarbonisation of the EU economy **by 2050**, through a number of research activities that contribute to safety optimisation of existing and new nuclear technologies.

Nuclear energy

Climate neutrality

Safety of nuclear energy installations

Technological sovereignty

Advanced reactor concepts

Green transition

Strategic autonomy

Radioactive waste management

Nuclear waste disposal

Nuclear technology innovation

Delivering on anticipation, integration and impact of EU policies

- ▶ providing independent scientific evidence addressing proposed nuclear technology innovation proposed for implementation in the EU Member States, related to the safety of reactors, materials, fuels, including waste management and disposal,
- ▶ supporting the adoption of state-of-the-art solutions for the long term operation of current systems, the final disposal of high-level waste and the introduction of advanced designs,
- ▶ contributing to discussions about nuclear energy as a safe, sustainable, and viable low-carbon power-generating source, based on its merits.

MAIN PARTNERS

European Commission's
departments
ENER, GROW, RTD

Selected stakeholders
IAEA, OECD/NEA

SMALL MODULAR REACTORS



A family of new and different nuclear reactors – Small Modular Reactors (SMRs) – is under development in different parts of Europe and the world. Much smaller than traditional reactors, SMRs can flexibly deliver electricity and low-carbon process heat for energy-intensive industrial applications (e.g., production of hydrogen, steel, ammonia, etc.) or for water desalination and district heating and cooling. They can support decarbonisation of hard-to-abate applications in the sectors power generation, industry, and transport sectors, while enhancing energy security and strategic autonomy. Presently, there is growing interest in potential solutions offered by SMRs at EU and Member State level, and within EU industry and investors. Like all nuclear installations, SMRs need to apply for a license before deployment. This licensing may benefit from early integration of Safety, Security and Safeguards (3S) principles in the design.

The portfolio aims to:

Support EU Member States and Commission services in assessing risks and benefits of Small (and Micro) Modular Reactors

Investigate the supply chain availability and long-term sustainability of components and critical materials required for the deployment of Small Modular Reactors

Evaluate the potential of Small Modular Reactors for decarbonising hard-to-abate sectors including electricity production and for enhancing energy security and strategic autonomy

Time frame

This portfolio provides research activities and input that support the deployment of SMRs with a **horizon of 2030**. The portfolio also aligns with the roadmaps of other deployment targets in the industrial nuclear field: the Sustainable Nuclear Energy Technology Platform (SNETP) – (the Nuclear Generation II & III Alliance (NUGENIA), the European Nuclear Cogeneration Industrial Initiative (NC2I), the European Sustainable Nuclear Industrial Initiative (ESNII) – the European Energy Research Alliance (EERA), the Joint Programme on Nuclear Materials (JPNM), the European initiative for the creation of an EU Small Modular Reactors (SMR) Partnership, contributing to the more **forward-looking** Green Deal objective of carbon neutrality in Europe by 2050.

05



Small Modular Reactors

Decarbonisation

Energy market

Minimisation of novel waste forms

SMR deployment

SMR licensing

Strategic autonomy

SMR fuels

Development of SMR technology

Climate change mitigation

Hard-to-abate applications

Strategic autonomy

Energy security

Delivering on anticipation, integration and impact of EU policies

- ▶ investigating how to increase strategic autonomy by consolidating the availability and long-term sustainability of supply chains for components and critical materials required for the deployment of SMRs,
- ▶ evaluating the potential contribution of SMRs to decarbonising hard-to-abate applications,
- ▶ assessing the economic viability and sustainability of different SMR designs, as well as their contribution to resilient energy production,
- ▶ supporting early integration of safety, security, and safeguards principles in SMR designs, including those coming from outside the European Union,
- ▶ contributing to EU efforts regarding the improvement of existing data, codes, and standards to cover the design, manufacturing, and in-service inspection of SMRs.

MAIN PARTNERS

European Commission's departments
ENER, GROW, RTD

Selected stakeholders
IAEA, OECD/NEA, Generation IV International Forum

DECARBONISED, SMART AND SAFE MOBILITY



Mobility is the lifeblood of society and the economy, but can also be harmful to the environment, through pollutant and greenhouse gas emissions (GHG) and increased energy consumption. Negative impacts also include accidents, congestion, noise, loss of public space and other externalities. Since 1990 transport has been the only sector with continuously increasing energy consumption and emissions, contributing about one quarter of the European Union GHG emissions. The EU Climate Law's objective of reducing GHG by at least 55% in 2030 and the transport sector target of 90% lower emissions by 2050 require ambitious policies and action. At the same time, continuous efforts at different levels are essential to meet the 'zero fatalities from mobility' and zero pollution goals.

The portfolio aims to:

Provide comprehensive expertise in the transport sector, for both passengers and freight

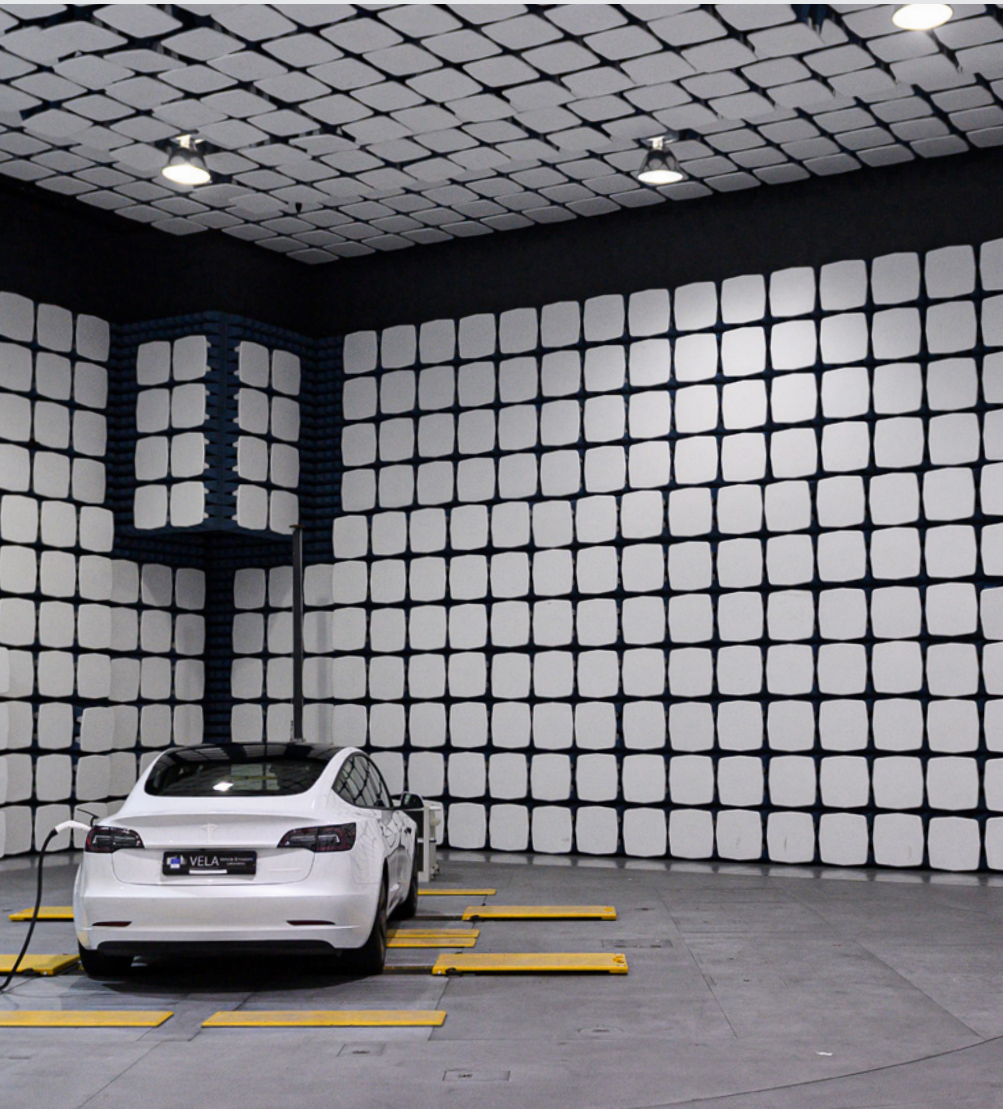
Anticipate solutions and support the development of policies for decarbonising transport and moving towards smarter, safer, cleaner, fairer and energy-efficient mobility systems and technologies

Explore options to limit transport dependence on privately-owned road vehicles and fossil fuels in the short- and medium-term

Time frame

06

The portfolio's activities cover different time horizons, from **short-term support** to the European Commission policies and initiatives in the transport field (such as the updates of CO₂ targets for light and heavy-duty vehicles, or the definition of standard and requirements for low-carbon, automated and connected mobility) to its **forward-looking ambition** of anticipating future policy options. The portfolio is also responsible for carrying out the market surveillance of road vehicles on behalf of the European Commission, in the **coming years**.



- Mobility
- Congestion
- Land-use consumption
- Pollution and energy consumption
- Accidents
- Road safety
- Automated vehicles
- Zero-emission
- TRIMIS
- Multimodality
- Urban mobility
- Connectivity
- Accessibility
- Drones
- Renewable Fuels
- Decarbonisation

Delivering on anticipation, integration and impact of EU policies

- ▶ helping to accelerate the transition to low energy consumption transport and low and zero-emission transport modes,
- ▶ carrying out studies of new concepts for advanced and automated vehicles and mobility, and assessing new technologies and social trends for optimising transport systems,
- ▶ verifying of compliance with the existing legislation on vehicles and components placed on the market,
- ▶ studying the impacts of new mobility concepts on the future urban ecosystems.

MAIN PARTNERS

European Commission's departments

CLIMA, CNECT, DEFIS, EMPL, ENER, ENV, GROW, MOVE, REGIO, RTD, TAXUD

Selected stakeholders

EEA, EU-Rail, UNECE, UN's Task Force on Emission Projections and Inventories

CITIES AND BUILDINGS FOR BETTER LIVES



Cities, urban areas and their built environments are home to 75% of EU citizens. Cities are at the heart of the EU economy and are where the green and digital transitions take place. Cities and buildings are therefore at the centre of key Commission policies and initiatives, including the Renovation Wave, the new Emissions Trading System for buildings and road transport, the Social Climate Fund, the REPowerEU initiative, the Covenant of Mayors, the EU Mission for Climate-Neutral and Smart Cities, the New European Bauhaus Initiative, the Urban Agenda for the EU, among others. The complexity of the specific challenges and opportunities faced by cities and the built environment call for a multi-disciplinary and holistic approach.

The portfolio aims to:

Accelerate the transition to climate-neutral, resilient, inclusive, healthy and beautiful cities, housing and infrastructure towards more liveable living spaces for all Europeans

Identify future ways of living by integrating sustainability, green and blue infrastructure, circularity, climate change adaptation, quality of experience and inclusion in the spirit of the New European Bauhaus

Contribute to the security of energy supply by reducing energy and resource demand of cities and buildings and their need for fossil-based fuels

07

Time frame

The portfolio provides scientific support through projects that currently further the delivery of its objectives within a **time frame up to 2026**. The **leading ambitions** of the activities and outputs foreseen within this portfolio are initially the **EU's 2030 climate targets**.



New European Bauhaus

Green transition

Urban Agenda

Urban mobility

Cohesion

Covenant of Mayors

Circular economy

Cities

Buildings

Cities Mission

Digitalisation

Inclusiveness

Renovation

Energy efficiency

Sustainability

Resilience

Renewable energy

Delivering on anticipation, integration and impact of EU policies

- ▶ providing foresight to address delays in policy interventions concerning emerging challenges and new phenomena occurring in cities and the built environment, in relation to the green and digital transitions,
- ▶ co-developing strategies, tools and data to help cities and buildings accelerate the green, digital and inclusive transformation across policy domains and with the engagement of their citizens,
- ▶ monitoring and assessment of the impact of key energy, climate and urban policies and initiatives in buildings and cities and their contribution to EU targets,
- ▶ integrating and developing existing knowledge on buildings and cities that addresses the current gap in 'integrated' knowledge for policy making,
- ▶ offering holistic solutions, at the level of buildings, infrastructure, neighbourhoods and cities, including a new EU digital building stock model.

MAIN PARTNERS

European Commission's departments

CLIMA, CNECT, EAC, ECHO, EMPL, ENER, ENV, ESTAT, GROW, HOME, IDEA, MOVE, REGIO, RTD, SANTE, SG

Selected stakeholders

EEA, CEN/CENELEC, IEA, OECD, UNFCCC, UN Habitat

PATHWAYS TO CLIMATE NEUTRALITY: THROUGH LOW-CARBON ENERGY AND LAND-USE MANAGEMENT



The EU's goal to reach climate neutrality by 2050 will require decarbonising the energy system faster than ever before. This transition entails an unprecedented challenge in terms of investing in energy efficiency, progressive electrification of final energy demand, and decarbonisation of power supply through renewables and other fossil-fuel-free technologies. Harnessing the full benefits of such a technological transformation requires a deep understanding of future sector-integrated energy systems. Understanding the costs and opportunities of this transition will be key for its fairness and inclusiveness. Achieving climate neutrality will also require land, forests, and agriculture to remove a vast amount of carbon dioxide from the atmosphere in a sustainable way – a formidable challenge, as this will entail the reversal of current trends.

The portfolio aims to:

Steer a range of energy and land-based policies towards the climate neutrality objective while considering the energy-related, environmental, and socio-economic constraints and opportunities

Provide scientific input to an updated vision for EU climate policies

Pave the way towards the 2040 and 2050 decarbonisation milestones, building on progress towards 2030 goals

08

Time frame

The portfolio has three main time horizons: analyses of the options for **2040 climate targets** (which will be the bridge between the agreed 2030 climate objectives and the climate neutrality goals in 2050), assessment of progress towards the **2030 decarbonisation targets**, and of the land-sector climate neutrality goals for 2035.



Climate neutrality

Low-carbon energy

Decarbonisation

Greenhouse gas emissions

Climate neutrality objectives

Energy transition

Carbon sequestration

Climate stability

Agriculture

Forestry

Economy

Delivering on anticipation, integration and impact of EU policies

- ▶ integrating energy, economy, agriculture and forest ecosystem and other land-use management components into an updated analytical toolbox enabling the development of integrated scenarios,
- ▶ analysing system costs, investment needs and socio-economic implications of the different climate, energy and land use policies and strategies,
- ▶ providing model baselines for further analysis of new policy proposals integrating the national energy and climate plans and the Common Agriculture Policy strategic plans and evaluations,
- ▶ making a direct contribution to the Commission's Impact Assessment of the 2040 Climate Target Plan through the development and economic assessment of integrated greenhouse gas (GHG) emission reduction scenarios,
- ▶ monitoring the progress of global climate commitments by providing GHG emission estimates based on atmospheric observations, and independent science-based global emission inventories,
- ▶ analysing pathways towards balancing agriculture, forestry and other land use emissions and removals and the sector's climate neutrality by 2035, including evaluating the risk from climate change impacts.

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, ECFIN, ENER, ENV, ESTAT, GROW, INTPA, MARE, MOVE, REGIO, RTD, TAXUD

Selected stakeholders

EEA, ECMWF, ICOS-ERIC, IIASA, IPCC, UNFCCC, WMO

ZERO POLLUTION FOR PLANETARY HEALTH - INTEGRATED RESPONSES



Pollution is a major cause of disease and premature death, loss of biodiversity and ecosystem services and is one of the drivers of climate change. Recognising that the impacts of pollutants – be they chemicals, particles, litter, noise, or light – are intimately connected to their environmental occurrence, the Zero Pollution Action Plan commits to reducing their levels so that they are no longer considered harmful to humans and nature by 2050. This requires multiple actions, ranging from monitoring and reduction at source, restoration, a shift towards a sustainable ‘green’ chemistry, the development of safe and sustainable products but also changes in behaviour, consumption, and use.

The portfolio aims to:

Anticipate and enable the formulation and implementation of policies for protecting and restoring planetary and human health

Assess the status of planetary health, including progress towards policy targets

Integrate pollution-related activities and research across the JRC

Time frame

09

Zero Pollution for Planetary Health Integrated Responses aims at a **continuous development and improvement** of indicators to evaluate pollution trends and progress towards policy objectives. The portfolio will focus its efforts on both **short-term input** (the next Zero Pollution Outlook Report is due **by the end of 2024**) and **long-lasting support** to policy needs, by ensuring a continuous release of highlights on achievements.



Delivering on anticipation, integration and impact of EU policies

- ▶ providing innovative tools and new methods for the monitoring and (eco) toxicological assessment of pollutants, supporting evidence-based EU policy measures on natural resources and sustainable development,
- ▶ identifying novel pollutants and issues of emerging concern thus increasing the Union's preparedness and responsiveness capacity,
- ▶ enabling the development for outlook and foresight studies regarding the sources and distribution of pollutants with a perspective of meeting the Zero-Pollution Ambition,
- ▶ supporting post-disaster and post-war needs assessment that mitigates the impact of pollution caused by disruptive events,
- ▶ integrating tools and data from in-situ measurements including citizen science-based approaches, modelling, and Earth observations to address pollution from various sources, across diverse sectors and environmental compartments,
- ▶ accompanying the transition to a healthier society and a sustainable circular economy,
- ▶ analysing drivers of increasing pollution such as population dynamics, socioeconomics (inequality and consumerism) and geopolitical aspects,
- ▶ anticipating the development of the chemicals acquis towards a more effective, efficient and animal-free assessment of chemicals,
- ▶ studying trade-offs and co-benefits of different de-pollution pathways.



MAIN PARTNERS

European Commission's departments

AGRI, CNECT, CLIMA, DEFIS, ENV, ESTAT, GROW, HERA, MARE, MOVE, NEAR, RTD, SANTE

Selected stakeholders

ECHA, EEA, EFSA, EMSA, HADEA, OECD, UNEP, WHO

HEALTHY BIODIVERSITY AND NATURAL CAPITAL ACCOUNTING



Biodiversity loss and ecosystem degradation are major threats to humanity today. To address these threats the Commission adopted the EU Biodiversity Strategy for 2030 – a comprehensive, ambitious and long-term plan to protect, restore and enhance natural capital, and break the link between economic growth and the unsustainable use of natural resources, mobilising efforts for sustaining EU and global biodiversity. It also calls for unlocking at least EUR 20 billion per year, and recent evidence led to this being raised to EUR 48 billion per year to deliver this strategy.

The portfolio aims to:

Increase scientific knowledge, mainstream biodiversity across policies, stimulate behavioural change and public engagement

Quantify the impacts and effectiveness of policies that restore and mitigate biodiversity loss and ecosystems degradation

Identify the interdependencies between environmental and human health adopting a 'One Health approach'

Time frame

10

In the **short term**, the portfolio will support the European Green Deal through the implementation of a series of strategies and initiatives (the EU Biodiversity Strategy, the 2030 Soil Strategy, the Farm2Fork Strategy, the Chemicals Strategy and the Zero Pollution Action Plan), and the development of the monitoring and indicator framework required to implement them. On a global level, this portfolio will also support the establishment up of the new Global Knowledge Support Service for Biodiversity.



Biodiversity

One Health

Nature restoration

Ecosystems

Forest

Global targets

Ecosystem degradation

Soil health

Freshwater

Nature conservation

Sustainable finance

Spatial planning

Natural capital

Chemical pollution

Delivering on anticipation, integration and impact of EU policies

- ▶ documenting biodiversity baselines and degrees of protection in terrestrial, soil, freshwater, and marine habitats,
- ▶ assessing the progress towards EU and global targets through accounts, dashboards, and indicators for assessing ecosystem condition and functioning, and ecosystem services,
- ▶ providing knowledge base to set up an effective monitoring scheme for the EU Pollinators Initiative and provide evidence on countering invasive alien species,
- ▶ developing metrics to steer the EU economy towards sustainability,
- ▶ providing quantified metrics to track policy performance for public and private evidence-based decision-making and spatial planning.

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, ECFIN, ENV, ESTAT, FISMA, INTPA, MARE, REGIO, REFORM, RTD, SANTE, TRADE

Selected stakeholders

ECHA, EEA, EFSA, EMA, ESA, UNEP

TRANSITION TO SUSTAINABLE FOOD SYSTEMS IN A EUROPEAN AND GLOBAL CONTEXT



Food is one of the most basic human needs. Producing it is a very prominent driver of global environmental change. The current food crisis is causing 3 billion people to have insufficient access to nutritious food, while acute hunger threatens over 200 million lives. Food systems, comprising the entire range of actors and their activities, have significant impacts on the economy, jobs, environment, climate, food safety, and the health and well-being of citizens. Science clearly shows that food systems need to adapt urgently and transform to preserve resources, including water and soil – as well as our climate and biodiversity – while guaranteeing access to affordable and healthy diets for everyone in the EU and beyond. The Russian war of aggression against Ukraine and the energy crises have exacerbated this need. Many partner European Commission’s departments and the public are demanding short- and long-term policy support.

The portfolio aims to:

Provide systemic analyses, responses and tools that anticipate and respond to food systems policy needs and integrate climatic, environmental, social, health and economic perspectives

Nurture user-communities, via the relevant Knowledge for Policy services such as on soil, food security, food quality and nutrition

11

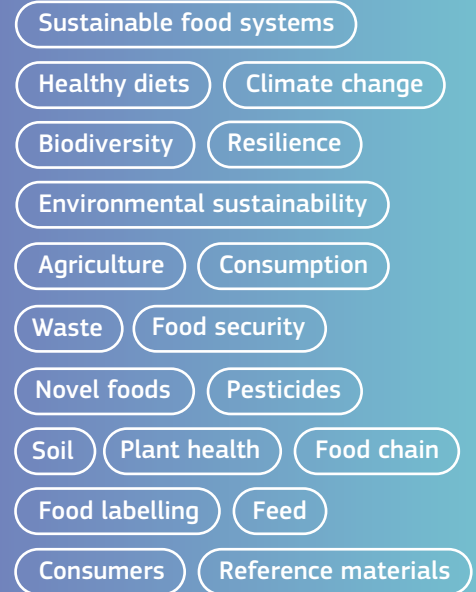
Time frame

The projects in the portfolio work across **diverse time scales**, ranging from the **short-term** – such as rapid earth observation to detect anomaly hotspots of agricultural production that immediately threaten regional food security – to **strategic and long-term analyses and support** to enable environments for healthy and sustainable diets, or achieve healthy soils, by 2050.



Delivering on anticipation, integration and impact of EU policies

- ▶ directly supporting the design, implementation and monitoring of EU legislation and initiatives related to sustainable food systems, such as, among others, the Farm-to-Fork strategy and contingency plan, the Common Agricultural Policy and Common Fisheries Policy, the Framework for Sustainable Food Systems, the Novel Foods Regulation, the Food Information to Consumers Regulation, the Biodiversity Strategy, Healthy Soils Strategy, Nature Restoration Law, Animal Welfare legislation, the Sustainable Use of Pesticides Directive, the Water Framework Directive, and the Drinking Water Directive,
- ▶ framing, defining and monitoring the EU global response to food insecurity and food crises, advancing UN Sustainable Development Goals and supporting the UN Food Systems Summit follow-up process,
- ▶ providing reliable data, indicators, and fit-for-purpose tools (from reference materials to laboratory models and analytical methods, to socio-economic models) to support scientific research and decision-making for more coherent and resilient food systems,
- ▶ running and promoting the Knowledge for Policy (K4P) services, Knowledge Synthesis Methods, EU Soil Observatory, Knowledge Centre for Bioeconomy, the Knowledge Centre for Food and Nutrition Security, the Knowledge Centre for Food Fraud and Quality, the Health Promotion and Disease Prevention Knowledge Gateway.



MAIN PARTNERS

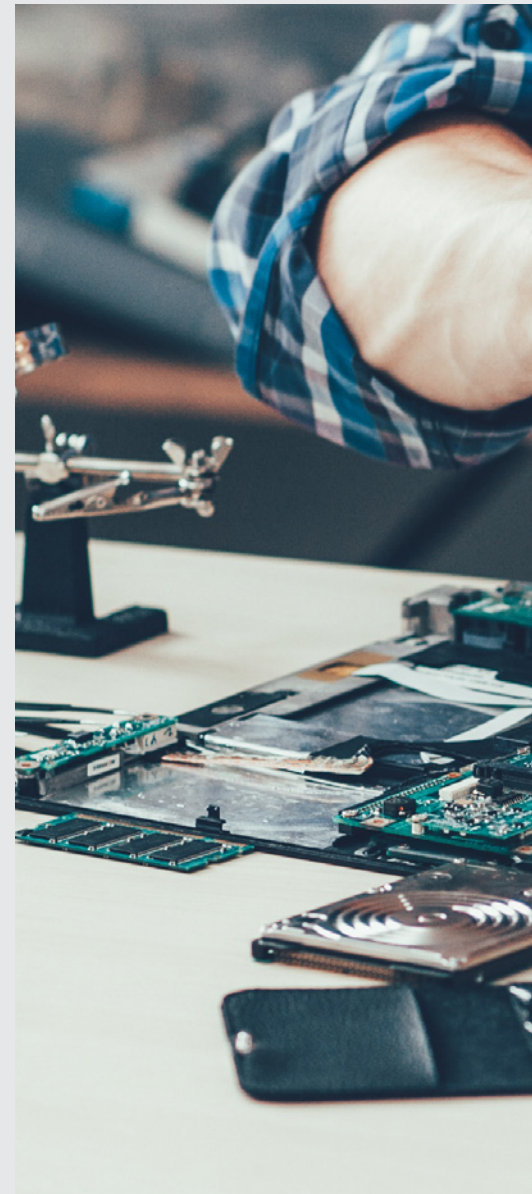
European Commission's departments

AGRI, CLIMA, EAC, ECHO, EEAS, JENV, ESTAT, INTPA, JUST, MARE, NEAR, OLAF, REFORM, RTD, SANTE, SG, TRADE

Selected stakeholders

ECHA, EFSA, ENRD

SUSTAINABLE MATERIALS AND PRODUCTS FOR A CIRCULAR AND RESILIENT EUROPE



The European economy needs to be future-proof and hence sustainable, climate-neutral, digital, resilient, and circular. This requires a strong upscaling of the use of secondary raw materials and of sustainable products (goods and services), as well as providing consumers with faith in these products and innovative business models. Enabling a shift towards a resource efficient and decarbonised economy requires scientific and technical support, including innovative instruments such as novel criteria, targets, measurement and verification methods and related quality-assured data. These will, in a longer term, generate new scientific evidence that allows widening the range of policy options for the next generation of circular economy and sustainability policies, and will contribute to the security of supply of raw materials.

The portfolio aims to:

Develop novel methods, models and standards to assess safety, sustainability and circularity of a broad range of products, materials, value chains and waste management options

Make green products the norm through validation of research findings on specific flagship products, through support of specific policy processes

Develop and maintain the knowledge base to support the creation of the next generation of policies for sustainable, resource-efficient and resilient production and consumption systems

12

Time frame

In the **short and medium term**, the portfolio aims to ensure the effective policy implementation of product-specific circular and sustainability requirements. The **long-term ambition** of the portfolio is to co-shape future circular and sustainable economy strategies, thereby significantly reducing the EU's environmental impacts and resource dependencies.



Sustainable products

Secondary raw materials

Critical raw materials

Circular economy

Open strategic autonomy

European Green Deal

Ecodesign

Ecolabel & Green Public Procurement

Environmental Footprint methodology

Green claims

Waste management

Sustainable chemicals & materials

Product Compliance Network

European Platform on
Life Cycle Assessment

Raw Materials Information System 3.0

Batteries

Delivering on anticipation, integration and impact of EU policies

- ▶ monitoring and anticipating EU and global trends in materials and product production and consumption that may pose considerable challenges in terms of environmental impact and resource dependency and developing EU policy options for a path to greater sustainability from an early stage; this includes foresight exercises for selected materials and technologies that are key for the climate-neutral and digital transitions,
- ▶ integrating a unique combination of laboratory testing capacity, modelling and analytical skills and stakeholder consultation processes to prepare a JRC consolidated contribution to EU policies,
- ▶ having a direct impact on EU policy by proposing new, legally binding sustainability and circularity requirements for materials, products, value chains and waste management, as well as by developing the methodological tools and data to assess and verify such requirements.

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, DEFIS, EEAS, ENER, ENV, ESTAT, GROW, INTPA, JUST, MOVE, RTD, SANTE, TAXUD, TRADE

Selected stakeholders

CEN/CLC, EEA, EIT-RM, OECD, International Resource Panel, Market Surveillance Authorities, Standardisation bodies (CEN/ CENELEC, ISO, IEC), UN

INDUSTRIAL TRANSFORMATIONS FOR SUSTAINABILITY, COMPETITIVENESS AND OPEN STRATEGIC AUTONOMY



A strong industrial base is a prerequisite for the independence, autonomy, and prosperity of the EU and for being able to deal with unpredictable shocks and shifting geopolitics. EU industry needs to undergo major transformations to meet the imperatives of climate neutrality and progress towards zero pollution and circularity, while remaining competitive, resilient, human-centred, and inclusive. Green and technological sovereignty policy targets, combined with rising energy prices, increase costs for EU industrial stakeholders. These impacts need to be analysed from a global perspective, merging considerations on open strategic autonomy, critical technologies, critical raw materials, sustainability, and economic efficiency. Targeted industrial research and innovation (R&I) investments and industrial transformations are needed to strengthen technological and industrial capacities across the whole value chain, to sustain EU leadership in green, carbon-neutral, circular, and strategic technologies and to avoid dependencies that create vulnerabilities.

The portfolio aims to:

Provide policy support to strengthen the sustainability and competitiveness of the EU industrial base by fostering innovation and the deployment of new technologies to bring about the twin green/digital transition

Contribute to the achievement of Open Strategic Autonomy through technological sovereignty, notably in relation to critical raw materials, critical technologies and key value chains, especially in the energy, space, security and defence sectors

Provide a multifaceted understanding of the changing dynamics and drivers of key global value chains to reduce undesired dependencies of the EU on global competitors or third countries. Analyse supply chains in the context of digitalisation and low-carbon society

Time frame

This portfolio will support policy needs in both the **short- and long-term**. The Raw Materials Information System 3.0 will be launched in early 2023 and the Innovation Centre for Industrial Transformations and Emissions will become operational in 2024. In a **more long-term perspective**, the Observatory of Critical Technologies will continue monitoring critical technologies and their value chains for defence, space and related civilian sectors during the entire Multi-Annual Financial Framework.

13



Research and innovation

Industrial policy

Strategic priorities

EU resilience and security

Green policy

Sustainability

Technological sovereignty

Open Strategic Autonomy

Critical technologies

Critical raw materials

Economic efficiency

Circularity

Technological and industrial competitiveness

Industrial Decarbonisation

Resource efficiency

Delivering on anticipation, integration and impact of EU policies

- ▶ developing environmental norms for large agro-industrial installations under the Industrial Emissions Directive, through the 'Sevilla Process' regarding, for example, emissions prevention or reduction, energy and water consumption, circularity,
- ▶ analysing of the role of technological solutions and innovation to decarbonise the European energy-intensive industry to become climate neutral by 2050, and helping to set default values for the Carbon Border Adjustment Mechanism,
- ▶ identifying drivers, opportunities, and bottlenecks (for example, technological, economic, legal) to the development and market deployment of new and critical technologies by EU industrial players,
- ▶ contributing to the Foreign Direct Investment screening and reporting,
- ▶ gathering evidence on firm dynamics, high-growth firms, start-ups and scale-ups and their impact on employment, industrial renewal and keeping the EU at the forefront of competitive innovation-driven entrepreneurship, including regional capabilities via Economic Complexity analysis,
- ▶ monitoring and analysing private R&I investments and technological capacities in the EU and its Member States, with emphasis on the twin transition of industrial ecosystems and value chains.

MAIN PARTNERS

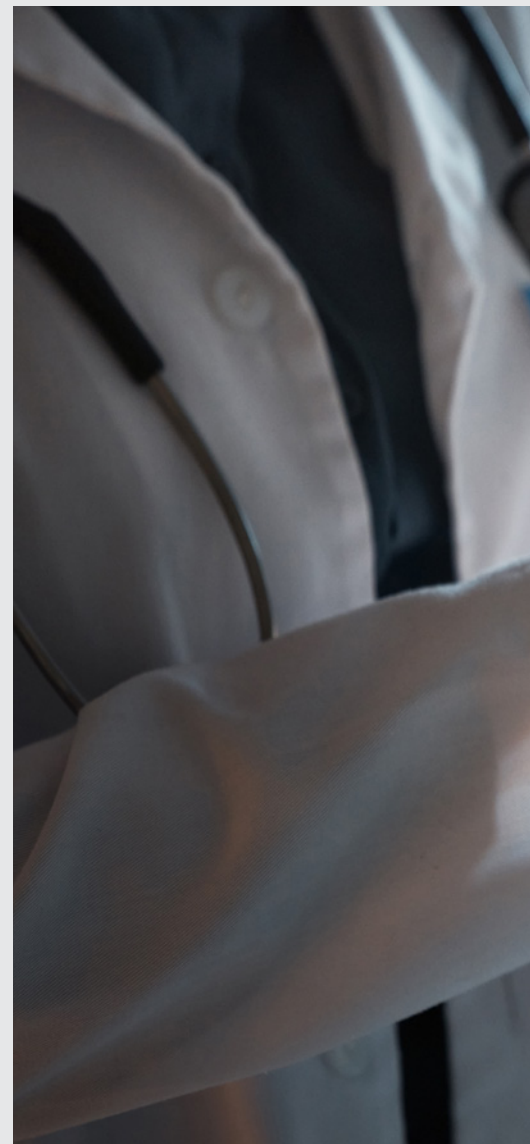
European Commission's departments

AGRI, CLIMA, CNECT, COMP, DEFIS, ECFIN, ECHO, EEAS, ENER, ENV, FISMA, GROW, HOME, INTPA, MOVE, NEAR, RTD, SG, TAXUD, TRADE

Selected stakeholders

Committee of the Regions, EEA, EGS, EIB, EIT-RM, IEA, IRENA, OECD, UNIDO

MONITORING AND SHAPING THE DIGITAL TRANSITION



The twin digital and green transition of the European society and economy is – and is likely to remain for the years to come – a key policy objective of the Commission. Europe needs to seize the opportunities offered by the digital transformation in terms of attracting investments, remaining a competitive economy, and retaining emerging, highly specialised, value-added jobs. However, a deep transformation such as that facilitated by digital technologies brings complex and interlinked challenges that need to be managed properly to avoid a divide between European regions and citizens. Digital technologies can enhance governance processes and ensure a path of transformation towards sustainability, resilience, and shared prosperity for the future of our society.

The portfolio aims to:

Analyse and monitor the socio-economic impact of current and emerging facets of the digital transformation

Shape the development and implementation of EU policies towards a successful, efficient and fair digital transition of the European economy and society

Identify strengths, competitive advantages and societal gains that could be seized during the digital transition of European societies and economies

Time frame

14

Within a **short-term perspective**, the portfolio will help shape the development, implementation, and evaluation of horizontal and sector-specific EU digital policy under the current European Commission. In the **medium and long term**, it will support the preparation of policy initiatives under the next Commission, including the **long-term objectives and targets** set for Europe's Digital Decade to 2030, the revised EU digital strategy, the European strategy for data, the EU industrial strategy, and the ambitious agenda of the recovery and resilience plans for Europe.



Digital technologies

Data flows

European Data Strategy

Data legislation

Digital Decade

Digital transition

Crypto-assets

Digital currencies

Digital commons

Emerging technologies

Digital innovation

Platform economy

Digitalisation of industry

Metaverse

Delivering on anticipation, integration and impact of EU policies

- ▶ analysing of the digital transformation of public sector and public services and of the progress in digitising European businesses, with a particular focus on SMEs,
- ▶ contributing to the development, implementation and evaluation of horizontal and sector-specific EU policies and initiatives aiming to reap the full potential of digital technologies,
- ▶ anticipating of emerging trends related to digital technologies and concepts, like virtual worlds, and their impacts on the environment, society, economy, and financial sector.

MAIN PARTNERS

European Commission's departments

AGRI, CNECT, COMP, DEFIS, DIGIT, EAC, ECFIN, EEAS, EMPL, ENER, ENV, ESTAT, FISMA, GROW, HERA, JUST, MOVE, NEAR, REFORM, RTD, SANTE, SG, TAXUD

Selected stakeholders

Digital Economics Research Network (DERN), ECB, European Network of Living Labs (ENOLL)

TRUSTWORTHY ARTIFICIAL INTELLIGENCE FOR A FAIR AND DEMOCRATIC EUROPE



Recent advancements in artificial intelligence (AI) are significantly impacting European society and accelerating the digital transformation of various industries, such as transportation and healthcare. While the increasing adoption of AI brings a range of potential benefits, it also presents new challenges and risks that need to be addressed. The Commission has put forward an ambitious strategy aimed at fostering AI excellence in Europe and ensuring that AI systems are trustworthy and protect the safety and fundamental rights of European citizens.

The portfolio aims to:

Provide scientific and technical support to horizontal EU policies on AI such as the AI Act, and their sectorial applications in domains such as transport, healthcare, education or science

Host the European Centre for Algorithmic Transparency, providing technical assistance and carrying out scientific research and foresight to support the implementation of the Digital Services Act

Advance frontier research on Trustworthy AI, to further push the interdisciplinary knowledge and foresight on the challenges brought by new AI developments such as foundation models

Time frame

15

The portfolio will coordinate the JRC efforts to address the multidisciplinary scientific and policy challenges brought by the increased uptake of AI across all sectors, within both a **short- and a long-term perspective**. In the **short term**, the scientific projects of the portfolio will focus on supporting the Commission's efforts regarding trustworthy AI through multidisciplinary contributions and input. The forward-looking ambition of the portfolio aims to continue to contribute to the **consolidation of the scientific knowledge** in the field.



Delivering on anticipation, integration and impact of EU policies

- ▶ providing scientific support to horizontal and sectoral AI-related policy initiatives in different stages of the policy cycle,
- ▶ hosting of the European Centre for Algorithmic Transparency, which is instrumental to the Commission's enforcement function foreseen by the Digital Services Act,
- ▶ providing economic analyses related to the implementation of the Digital Services Act (for example, supporting secondary legislation on the designation of very large online platforms and search engines),
- ▶ providing technical and scientific support for the negotiation and implementation of the AI Act and the Coordinated Action Plan on AI, as well as the revision of the Product Liability Directive and the proposal for the AI Liability Directive.

Digital society

Digital services

Artificial intelligence

Recommender systems

Trustworthy AI

Cybersecurity

Privacy and data governance

Digital Services Act

Artificial Intelligence Act

Transparency

Accountability

Diversity, non-discrimination & fairness

Human oversight

Transparency

Social & environmental well-being

European Centre on
Algorithmic Transparency

MAIN PARTNERS

European Commission's departments

AGRI, CNECT, COMP, DEFIS, DIGIT, EAC, EEAS, EMPL, ENER, ESTAT, GROW, HOME, HR, JUST, MOVE, RTD, SANTE, TAXUD

Selected stakeholders

AI-related research institutes, CEN/CENELEC, ECDC, ELLIS/CLAIRE within Europe, ENISA, ETSI, OECD, UNECE, UNESCO

CYBERSECURITY OF SOCIETY AND INDUSTRY



In a world where digital technology is becoming increasingly ubiquitous, cybersecurity will be the digital anchor of European principles and rights. It will be the means by which governments will protect citizens from internal and external threats and ensure access to fair and safe cyber-digital services. The design of this new European digital society requires solid foundations, which can only be built using trusted and safe digital technologies and guaranteeing a cybersecurity-by-design approach across all layers of the European digital space.

The portfolio aims to:

Contribute to the design of the new European digital society built on trusted and safe digital technologies

Help to guarantee a cybersecurity-by-design approach across all layers of the new European digital space

Enhance citizens' level of trust in the new 'digital way of living' foreseen by the Digital Compass

16

Time frame

In the short term, the portfolio will focus on supporting the implementation of the European cybersecurity strategy and streamline cybersecurity in vertical, sectoral policy initiatives. Within a forward-looking perspective, the portfolio will help to lay the foundations for and contribute to the development of the European digital society.



- Cybersecurity
- Digital compass
- Digital technologies
- Digital market
- Security-by-design
- Foresight
- European digital space
- Cyber-threats
- Cyber-defence
- Cybercrime
- eHealth
- Situation awareness
- Transport system
- Digital energy
- Blockchain
- Finance system
- Telecommunication systems
- Artificial intelligence

Delivering on anticipation, integration and impact of EU policies

- ▶ carrying out research on fundamental cybersecurity topics, such as emerging digital technologies, sectoral cybersecurity principles and paradigms, situation awareness of cyber-threats, cyber-defence, and cyber-resilience,
- ▶ supporting horizontal cybersecurity policy initiatives, such as the establishment of the European Network of Security Operations Centres, the definition of a cross-border cyber-threat intelligence platform, and further development of the cybersecurity atlas,
- ▶ supporting sectoral cybersecurity policy initiatives, including intelligent transport system cybersecurity, telecommunication services cybersecurity, energy and smart-grid cybersecurity, eHealth cybersecurity, finance system cybersecurity, secure and trusted digital identities, anti-trust and competition in the digital services and digital market.

MAIN PARTNERS

European Commission's departments

CNECT, COMP, DEFIS, DIGIT, ENER, HOME, HR, JUST, MOVE, SANTE, TAXUD

Selected stakeholders

ACER, CERT-EU, ENISA, EU-LISA, Europol, FRONTEX

EXPLOITING DATA AS A STRATEGIC RESOURCE FOR SCIENCE AND POLICY



Data, and the ability to use it effectively, legally, and ethically is essential for policy support, innovation, and growth. Several recent Commission documents, such as the 2020 Commission Data Strategy or the AI Initiative emphasise the importance of data sharing, enhanced data management, and analytic capabilities for better policymaking. Moreover, emerging technologies in data science and AI often rely on datasets from trusted sources, while considering any bias/inaccuracy and outliers. High quality data and robust statistical methodologies to analyse them are critical for the construction of new knowledge and the provision of explanatory, anticipatory, or prescriptive science advice. The JRC has a data strategy to achieve just that. The portfolio contributes to the implementation of the data strategy.

The portfolio aims to:

Facilitate the work of scientists to produce, find, acquire, curate, reuse, share, integrate, analyse and visualise data

Implement a fit-for-purpose Information and Communication Technologies data infrastructure and support data services

Develop cutting-edge scientific methods and analytics tools for data-driven knowledge creation

17

Time frame

The data portfolio operates with a **long-term horizon**, as the need for the strategic use of data, both at the JRC and in the European Commission, is here to stay. In the **short term**, in addition to continuing the development of analytic techniques and tools applied to specific data-informed policy problems, the work will focus on a new data architecture blueprint for the JRC and on establishing data support services.



Delivering on anticipation, integration and impact of EU policies

- ▶ enabling strategic use of data, allowing portfolios and scientists to draw on and connect cross-cutting data and knowledge from across the JRC, the rest of the Commission and external sources,
- ▶ developing new innovative scientific methods and analytics tools for data-driven knowledge creation in various fields (for example, Customs Union, anti-fraud, disinformation, media monitoring, innovation monitoring and anticipation, European Green Deal, political intelligence),
- ▶ designing an Information and Communication Technologies data infrastructure based on a consolidated set of user requirements and further advancing data services based on common JRC needs (for example, the JRC Research Data Repository, data search capabilities, media analysis capability),
- ▶ improving JRC data management, analysis, and sharing by consolidating and strengthening data and analytics services as envisaged in the JRC data strategy.

- Data
- Data analytics
- ICT and data infrastructure
- Data services
- Blue Economy
- Data governance
- Data management
- Knowledge management
- AI
- Robust statistics
- Text mining
- Emerging technologies
- Natural language processing
- Open and FAIR data analytics

MAIN PARTNERS

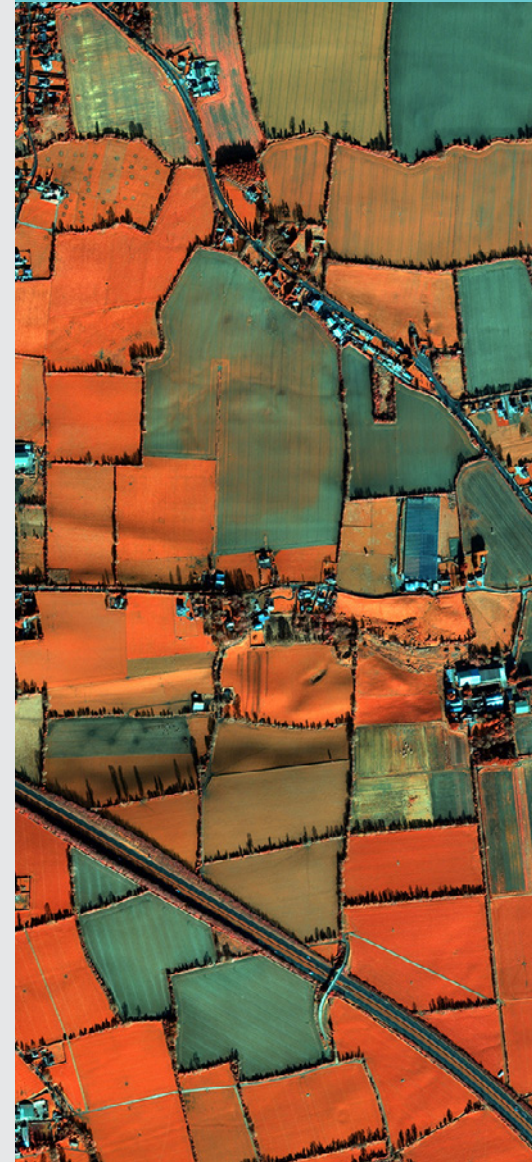
European Commission's departments

AGRI, BUDG, COMM, DIGIT, EAC, ECFIN, EEAS, ENER, ESTAT, FPI, JUST, NEAR, OLAF, OP, RTD, TAXUD

Selected stakeholders

ACER, CERN, Clean H2, EDPS, EEA, EFSA, EISMEA, EOSC, ESA, ISO, MS Customs

OBSERVING THE EARTH FOR POLICY



The twin digital and green transitions will transform policymaking through a broader and more efficient use of Earth Observation (EO) products and services. The Copernicus Programme is a powerful tool for inclusive and progressive policymaking, fostering policy coherence across sectors and policy clusters. The Commission should advance towards a stronger, independent, fit-for-purpose EO capacity in the EU and beyond and drive the development of the relevant programmes, notably through the Copernicus, but also through the synergistic use of other Space Programme components (for example, Galileo/EGNOS (European Geostationary Navigation Overlay Service), GovSatCom (European Union Governmental Satellite Communications programme)).

The portfolio aims to:

Support data-driven policymaking, fostering policy coherence across sectors, in particular in support of the European Green Deal

Advance towards a stronger, independent, fit-for-purpose EO component in the EU Space Programme

Promote technology uptake and drive development of the relevant policies and EU programmes, notably Copernicus

Time frame

18

Using Earth Observation data throughout the policy cycle to support the European Green Deal has demonstrated benefits, with impactful consequences for policymaking in **both the short- and long-term**. Furthermore, the **upcoming 24 months** will be critical for defining and refining the next generation of the EU's EO capacity looking out to **2035 and beyond**. Our ambition is to build on these two elements to ensure a more fit-for-purpose EO capacity to support the next green transition.



Copernicus Programme

Space programmes

Earth Observation (EO)
products and services

Technological development

Digital development

GHG emission monitoring

Climate change impact assessment

Green transition

Environment

Monitoring of land, oceans,
atmosphere and climate

Delivering on anticipation, integration and impact of EU policies

- ▶ carrying out research for in-depth understanding of policy needs and their translation to requirements for EO use, providing support for the implementation and the evolution of Copernicus and strategic services (e.g., Global Land) and prioritisation of the Research and Innovation programmes,
- ▶ carrying out quality assurance work, including validation and fitness for purpose, which is needed to provide traceable evidence of the use of land, atmospheric, marine and climate EO products in various EU policies,
- ▶ driving the development and deployment of concrete EO applications and monitoring systems on key policy areas for future green transitions, especially in the fields of agriculture and forest management, but also ecosystem and land degradation and desertification.

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, COMM, DEFIS, EAC, ECHO, EEAS, ENER, ENV, ESTAT, GROW, HERA, HOME, INTPA, MARE, MOVE, REGIO, RTD, SANTE

Selected stakeholders

BIPM, CBD, CEOS, EEA, EMSA, ESA, EUMETSAT, EUSPA, FRONTEX, GCOS, GEO, GOOS, ISO, UN Agencies, UNCCD, UNFCCC, WMO

GALILEO NEXT GENERATION AND SECURE CONNECTIVITY



Space is an increasingly competitive global commons that can improve terrestrial connectivity and positioning services. Modern telecommunications networks and global navigation satellite systems, such as 5G and Galileo, enable services for every sector of the EU economy, thus promoting the digital transformation. These systems are essential for increasing the EU's resilience and security. Modern societies and their economies have rapidly become crucially dependent on telecommunications networks and Positioning, Navigation and Timing services (PNT). Overall, space-terrestrial connectivity and PNT infrastructures can generate considerable growth in many downstream sectors of the EU economy.

The portfolio aims to:

Contribute to the evolution of the EU Space Programme through independent, evidence-based scientific and technical support

Provide scientific analysis on cutting-edge technologies and policy aspects related to space infrastructure development with a focus on secure connectivity, positioning, navigation and timing

Support the implementation of the EU-related programmes and actions, like the EU Space Programme, the EU radio spectrum policy programme and the action plan on synergies on civil, space and defence industries

19

Time frame

This portfolio has a **medium- and long-term perspective** and will support a number of EU policies throughout the 2023-2027 Multi-annual Financial Framework and beyond, such as the EU Space Programme, the new EU Radio Spectrum Policy Programme, and the new EU Strategy on Standardisation.



Space Secure connectivity

Global satellite navigation systems

Terrestrial-space connectivity systems

PNT infrastructures

Telecommunications networks

Emerging technologies

EU space programme

Communications technologies

Galileo IRIS²

European standards

European Microwave
Signature Laboratory

Radio Spectrum Laboratory

Digital Connectivity Living Lab

Delivering on anticipation, integration and impact of EU policies

- ▶ anticipating future policy needs and regulation in space and terrestrial telecommunications (e.g., frequency management of novel communications services (e.g., IRIS²) and 6G networks),
- ▶ developing technical capacity in the context of the EU's new IRIS² initiative,
- ▶ ensuring deeper integration of Galileo, the European Geostationary Navigation Overlay Service (EGNOS) and GovSatCom (European Union Governmental Satellite Communications programme) with terrestrial communications networks (e.g., 4G and 5G) to provide alternative positioning, navigation, and timing mechanisms, as well as new communications services,
- ▶ carrying out scientific and technical studies (including experimental work) on the use of emerging technologies such as 6G and quantum in space.

MAIN PARTNERS

European Commission's departments

CNECT, COMP, DEFIS,
ECHO, EEAS, GROW,
HOME, MARE, MOVE

Selected stakeholders

CEN/CENELEC, CEPT, ESA, ETSI,
EUROCAE, EUSPA, , EU-US Working
Group on Galileo/GPS Cooperation,
ICAO, International Committee
on GNSS, IEC, ITU

TOWARDS AN INCLUSIVE AND RESILIENT SOCIETY: SOCIAL JUSTICE AND FAIR TWIN TRANSITIONS



The socio-economic development of our societies faces many existing as well as new challenges. For instance, the twin transition will affect households and their prospects. The political priority of social cohesion and development is expected to intensify in the future, putting the social dimension at the heart of Europe's policy agenda. Social policies and social standards are also important for people. Citizen engagement is a key condition not only for the promotion of trust and social cohesion in Europe, but also for successful transitions. All these challenges need the development of a coherent vision and a forward-looking reflection on crucial issues and policy priorities, while addressing fairness and inclusiveness as guiding principles for the recovery.

The portfolio aims to:

Monitoring and analyses of key trends and prospects of society (inequalities, poverty, gender equality, health status, loneliness, social polarisation, socio-economic and behavioural impacts of policies)

Forward-looking analyses of global transformations – impacts on economic, behavioural and social outcomes, the role of citizens in shaping these transformations, implications for tax-benefit systems and social protection

Analyses of socio-economic aspects of transformative policies, such as the European Green Deal: assessment of distributional impacts of climate, energy, transport and digitalisation policies, and identification of potential remedies for any negative effects

20

Time frame

The portfolio has both a **short-term** and a **forward-looking perspective**, aiming to support ongoing and forthcoming policy initiatives in the social domain, linked to fair transitions, energy poverty, and the European Pillar of Social Rights.



Socio-economic developments

Social cohesion

Inequalities

Regional disparities

Poverty

Social protection schemes

Migration

Housing

Social innovation

Loneliness

European Pillar of Social Rights policy

Fairness perceptions

Social justice

Societal resilience

'Beyond GDP'

Fair twin transitions

Transformative policies

Behavioural insights

Delivering on anticipation, integration and impact of EU policies

- ▶ contributing to the social impact assessment of the 2040 climate package,
- ▶ supporting the work of the Energy Poverty Advisory Hub,
- ▶ working towards an integrated measurement framework for sustainable and inclusive well-being 'beyond GDP',
- ▶ performing further actions to implement the European Pillar of Social Rights,
- ▶ carrying out enhanced distributional impact assessments by Member States,
- ▶ analysing the fiscal impact of the Temporary Protection Directive for people fleeing Ukraine,
- ▶ contributing to the plan for a new framework for company taxation,
- ▶ responding to the European Parliament's request to study loneliness,
- ▶ supporting one of the pillars of the European Climate Pact – encouraging action by exploiting insights from behavioural economics

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, EAC, ECFIN, EMPL, ENER, ENV, HOME, INTPA, JUST, MOVE, NEAR, RECOVER, REGIO, RTD, TAXUD, SANTE, SG

Selected stakeholders

ACER, EEA, EIGE, Eurofound, European Parliament, ILO, OECD, World Bank

EDUCATION, SKILLS AND EMPLOYMENT FOR A FAIR TWIN TRANSITION



The twin green and digital transition towards a climate neutral economy will have significant implications for skills development, education and employment. At the same time, skills, education, new tasks and occupations are important enablers of the twin transition. The twin transition adds to the transformation of the labour market caused by other factors, especially demographic change. This will have a specific impact on certain sectors, notably health and social services. Untapped job potential in these sectors offers an opportunity. These issues need an integrated, anticipatory and collaborative scientific response, supporting the formulation and implementation of EU and Member State policy.

The portfolio aims to:

Link and integrate the relevant policy areas across and within the Commission, taking into account developments under the Skills Agenda and the work of partnerships established in various ecosystems

Promote the implementation of the twin transition in the appropriate political, economic and social contexts

Anticipate the ways in which institutions can influence opportunities, constraints and choices as a precondition for the design and implementation of efficient and fair policies and tools in the area of human capital

Time frame

21

The time dimension of the portfolio is determined by the time horizon of the twin (green and digital) transition, which requires a **forward-looking perspective** (i.e., 20 to 30 years). At the same time, while ensuring a consistency with its **long-term horizon**, the portfolio will align its activities with the **shorter-term policy priorities** defined in the areas of education, skills and employment (e.g., the Digital Education Action Plan, the Platform Work Directive, the European Education Area), as well as with the broad policy objectives of the Commission (e.g., European Green Deal).



Education

Training

Employment

Long-life learning

Labour market

Competences

Green and digital skills

Skills

Job quality

Wage inequality

European Pillar of Social Rights

European Education Area

Delivering on anticipation, integration and impact of EU policies

- ▶ providing evidence on the uptake and implementation of key competences for life-long learning in line with the 2018 Council recommendation, taking into account existing skill taxonomies,
- ▶ identifying and measuring digital and green skills and competences relating to skills needs and gaps, and supporting the design and implementation of effective upskilling policies, aiming at the development and common recognition of digital skills across EU Member States,
- ▶ anticipating the educational challenges and opportunities associated with the European Green Deal and the New European Bauhaus Initiative to support individuals in embracing sustainable, inclusive and healthy lifestyles,
- ▶ assessing the labour market impact and policy implications of the twin transition in Europe, covering issues such as job quality and wage inequality, as well as health impacts and the territorial dimension.

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, EAC, ECFIN, EMPL, ENV, GROW, INTPA, MARE, MOVE, REFORM, RTD

Selected stakeholders

CEDEFOP, ETF, EUROFUND, IEA, ILO, OECD, UNESCO

ECONOMIC GOVERNANCE AND STRUCTURAL REFORMS



The EU needs to build a sustainable path to prosperity through transformative economic governance and structural reforms. The EU economic policy agenda is geared towards developing a strong and vibrant economic base, while building a resilient, green and fair economy that is better prepared for future shocks. This requires deep scientific understanding, as well as anticipation and modelling capacity to provide prompt and effective advice on both macro- and micro impacts, their integration and possible policy responses.

The portfolio aims to:

Integrate various JRC work streams to better support the EU economic policy agenda with robust scientific evidence

Contribute to key areas of the EU economic governance framework, such as macro-economic and fiscal policies, macro-financial supervision, as well as structural reforms at Member State and regional levels

Analyse and anticipate the environmental and socio-economic effects of globalisation in the EU economy, climate change impacts, energy inflation, raw material scarcity and transition risks

22

Time frame

By harnessing the complementarities among the diverse micro- and macro-analysis tools of the JRC, this portfolio will ensure a cohesive approach to supporting structural reforms at Member State as well as regional level. This will allow the creation **in the medium term** of a shared knowledge base for policy intelligence, which will further strengthen the JRC's added value for EU economic governance.



Macroeconomic policies

Fiscal policies

Economic governance

Structural reforms

Recovery plans

Macro-financial supervision

European Semester

Partnership for Regional Innovation

New sources of revenue

Sustainable Development Goals

Macroeconomics of the twin transition

Delivering on anticipation, integration and impact of EU policies

- ▶ providing macro- and micro-economic analysis and modelling tools to support the European Semester in economic, fiscal, employment and social policy coordination within the EU, and the implementation of the Recovery and Resilience Facility,
- ▶ developing and implementing of the Partnerships for Regional Innovation,
- ▶ providing technical expertise for EU Member States to design and implement structural reforms at the national level,
- ▶ now-casting Gross Domestic Product (GDP), inflation and selected indicators related to the Sustainable Development Goals (e.g, in the social dimension) and the green transition.

MAIN PARTNERS

European Commission's departments

BUDG, CLIMA, COMP, ECFIN, EMPL, ENERG, ENV, ESTAT, RECOVER, REFORM, REGIO, RTD, TAXUD, TRADE, SG

Selected stakeholders

Central Banks, CEPR, IIOA, OECD, SHAIO, UNECE

TERRITORIAL INTELLIGENCE FOR EU POLICIES



In the coming years, the EU will increasingly face the impacts of ageing and demographic decline, as well as territorial inequalities along multiple dimensions, exacerbated by the COVID-19 pandemic and global geo-political instability. Addressing these challenges is key to building a fairer and more resilient society, strengthening links between citizens and the democratic institutions that serve them. There is a need to provide data and knowledge to support the design of future-proof policies that could counter the effects of increasing economic inequality across EU territories. Territorial and sectoral dimensions are a fundamental dimension of designing, monitoring and assessing the impact of policies, while territorial impact assessments are a key element of the Better Regulation Package.

The portfolio aims to:

Provide analyses of EU policies, while preserving the highest level of coherence and comparability of the analytical framework and adopted tools

Help achieve a coherent framework for monitoring and impact assessment of policies across territories and economic sectors with the highest level of detail

Integrate multidisciplinary research, such as modelling, data science, and econometrics, to provide evidence for EU policies with a territorial dimension

Time frame

This portfolio has a **medium- and long-term approach**, by supporting multiple, collaborative activities on long, multi-annual objectives. Through various analytical tools and methods, it will carry out (ex-ante, mid-term and ex-post) evaluations of EU funding programmes, provide impact assessment for forthcoming legislation and support the monitoring of Sustainable Development Goals for the 2030 Agenda for Sustainable Development.

23



Territorial impact assessment

Territorial dimension

Urban policies

Regional policies

Sustainable development

Rural development

Tourism

COVID-19 recovery

Recovery and Resilience Plan

Delivering on anticipation, integration and impact of EU policies

- ▶ monitoring and evaluating internal and external EU policies and funding programmes through the territorial dimension (place-based strategies),
- ▶ assessing relevance of the interplay between territories and economic sector, as well as broader domains, such as labour market conditions, employment dynamics, health, education and youth, the environment and climate change, and their relations with sustainability,
- ▶ targeting territorial impact assessment of EU funds in their multi-dimensional policy aspects.

MAIN PARTNERS

European Commission's departments

AGRI, CNECT, ECFIN, EMPL, ENV, ESTAT, GROW, HOME, INTPA, MARE, REGIO, RTD, SG

Selected stakeholders

CoR, EIB, OECD, World Bank

SCIENCE FOR THE GLOBAL GATEWAY AND THE INTERNATIONAL GREEN DEAL



Global Gateway is a flagship EU strategy, driven by the ambition and policy priorities for strengthening the EU's global leadership role, championing international standards and a multilateral, interdisciplinary approach to climate and energy, digital infrastructure, health, transport, education and research. The International Green Deal aims to extend the EU's stated goal of a low-carbon future and a green economic growth strategy outside of the EU. This portfolio benefits from JRC expertise in the key domains of air, water, soil and biodiversity, to provide scientific evidence, research networks and support to the innovation agenda in order to deliver a robust, science-based and integrated multi-sectoral approach to our international partnerships for sustainable development.

The portfolio aims to:

Foster a more integrated approach to the external dimension of EU policies - how we act as a global partner and how EU investment, based on good science, can have maximum impact

Support the EU negotiating position in international fora and in accession and neighbourhood discussions

Channel JRC know-how and links to EU policy through new and enhanced regional centres of excellence, encouraging the use of cross-sectoral scientific evidence

24

Time frame

This portfolio has both a **medium and forward-looking horizon**. In the **medium term**, it will follow the timeline of the Global Gateway strategy (2021-2027). However, its ambition is to provide scientific advice and expertise in the field within a time-perspective that goes **beyond this time frame**.



Delivering on anticipation, integration and impact of EU policies

- ▶ supporting operations of regional centres of excellence, especially in Africa, to foster the development of economies of scale, adoption of standards and interoperability, knowledge and information sharing and human capacity development,
- ▶ contributing to key EU Enlargement and Neighbourhood initiatives (e.g. Western Balkans Agenda on Innovation and the Green Agenda for the Western Balkans, EU-Morocco Green Partnership),
- ▶ supporting the Africa-EU Green Energy Initiative,
- ▶ assessing energy connectivity towards the EU in the context of REPowerEU,
- ▶ monitoring the impact of Global Gateway-related initiatives to detect gaps early, redirect investments, and shape the next round of international investments for sustainability,
- ▶ providing technical and scientific expertise on nuclear safety and safeguards,
- ▶ helping the EU deliver the targets defined by the European Green Deal and meet its geopolitical interests in the Arctic,
- ▶ supporting the creation of strategic, sustainable and secure transport corridors and supporting value chains, services and jobs that can benefit industries in both Africa and Europe.

Global challenges

Science for diplomacy

International cooperation and trade

Sustainable development

Human development

Clean Energy

Energy security

Climate

Air

Food and natural resources

Agriculture and environment

Biodiversity

Africa

Western Balkans

Neighbourhood

Arctic

Global Gateway

Strategic Corridors

NDICI

European Green Deal

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, DEFIS, EAC, ECHO, EEAS, ENER, ENV, FPI, GROW, HOME, INTPA, NEAR, MARE, RTD, SANTE, SG, TRADE

Selected stakeholders

African Union Commission, FAO, UNDP, UNEP, UNESCO

ENHANCED SITUATIONAL AWARENESS FOR CRISIS MANAGEMENT



The EU might be exposed to a variety of man-made and natural crises and disasters and should be capable of responding quickly and appropriately. Managing critical situations goes beyond emergency response and includes disaster risk reduction, in particular through preparedness and prevention, with the aim of increasing resilience in the face of crises. Situational awareness needs to cover known and unknown threats and tie-in well with conflict- and crisis-prevention mechanisms. Science can contribute during conflicts and crises if the ground is prepared with a well-practiced science policy interface.

The portfolio aims to:

Support the Commission and Member States with situational awareness for a variety of hazards and sectors

Offer better early warning for crises, based on anticipation of their impacts on society, including human health, economy and nature

Offer real-time unified situational awareness and communication with EU and Member State emergency centres and stakeholders

Time frame

25

In the **short term**, the portfolio aims to improve global monitoring of health threats, food security, nuclear accidents, disasters and humanitarian crises, by bringing together all JRC projects on risk assessment, early warning and impact assessment of crises, as well as facilitating cross-team risk analyses, improving the understanding and anticipation of systemic impacts. The portfolio will also develop a methodological framework for integrated mid-term early warning (monthly time scale), with both **short-term** (better monitoring) and **long-term** benefits (anticipation of crises).



Situational awareness

Early warning

Risk assessment

Impact assessment

Preparedness

Emergency management

Crisis response

Hazards

Extreme events

Security

Cascading impacts

Civil protection

Copernicus Emergency System

Radiological emergency

Earth observation

Contingency planning

Delivering on anticipation, integration and impact of EU policies

- ▶ performing cross-sectoral risk analyses, mutually improving the understanding and short-term prediction of systemic impacts of crises,
- ▶ integrating key EU space capabilities provided by the Copernicus emergency management, security and land services,
- ▶ developing and integrating data, tools and methods through the European Crisis Management Laboratory and other EU alerting and monitoring systems, to improve real-time harmonised situational awareness and coordinated communication with EU and Member States' emergency centres and stakeholders,
- ▶ providing technical and scientific support to radiological emergency preparedness systems and arrangements, as well as health alerting and preparedness systems with regard to natural or human-induced hazards, as part of the overall crisis response of the Commission, using tools such as DAPHNE (Diagnosis and Prognosis of Hazards in Nuclear Emergencies) and with the support of the European Radiological Data Exchange Platform (EURDEP) and the European Community Urgent Radiological Information Exchange system (ECURIE).

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, COMM, DEFIS, ECHO, EEAS, ENER, ENV, FISMA, FPI, HERA, HOME, INTPA, RTD, SANTE, SG

Selected stakeholders

ECDC, EMA, IAEA, WHO

UNDERSTANDING AND ACTING ON FUTURE RISKS AND OPPORTUNITIES



Managing risks is an inherently scientific and political activity that can often lead to difficult trade-offs. The better the assessment of the risks to be managed, the easier this task becomes. Climate change and extreme events are perceived as the biggest risk by individuals and businesses and tackling them is the first priority of the European Green Deal. Other risks, such as those arising from the current geopolitical reality, have challenged the EU with their broad socio-economic impacts. Dealing with existential known, emerging, and future risks requires a broad understanding of complex systems linking society, the economy, the environment, technology, resources and (geo)politics. This effort will also make it possible to identify and exploit any opportunities that may arise.

The portfolio aims to:

Anticipate and reduce potential future risks, provide forward-looking analysis and policy support, and analyse the emergence of disruptive events

Increase the understanding and modelling of the evolving and emerging risk and opportunity landscape with plausible scenarios for systemic impacts

Explore opportunities and trigger actions regarding disaster risk reduction, climate change resilience and adaptation, biodiversity loss and environment degradation, as well as financial stability

Time frame

The target horizon for this portfolio covers both **medium-** and **long-term activities**. Climate analyses on future scenarios usually have a multi-decade horizon, although there is a growing interest in the next 5 to 10 years, thanks to the progress on seasonal-to-decadal climate predictions. Financial analyses cover the medium-term (3 to 5 years), while economic analyses are usually performed for up to the next 10 years.

26



- Risk
- Natural hazards
- Climate change
- Geopolitical crises
- Conflicts
- Financial shocks
- Biodiversity loss
- Health threats
- Migration flows
- Energy shocks
- Chemical and biological hazards
- Disaster risk reduction
- Adaptation
- Mitigation
- Resilience
- Climate extremes

Delivering on anticipation, integration and impact of EU policies

- ▶ developing plausible scenarios on how complex global risks can affect the EU through cascading chains of vulnerabilities, feedback and shocks, and what losses are at stake if risks occur,
- ▶ developing tools, data and methodologies to serve risk owners at multilateral, supra-national, national, regional and city levels,
- ▶ providing national, regional and local authorities with knowledge, data and tools to help them act on resilience-building, risk reduction and climate change adaptation thus supporting enhanced EU cooperation.

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, DEFIS, ECFIN, ECHO, EEAS, EMPL, ENER, ENV, FISMA, FPI, GROW, HERA, HOME, INTPA, MOVE, REGIO, RTD, SG

Selected stakeholders

ECB, EEA, EFSA, EIOPA, FAO, OECD, UNCCD, WMO, World Bank

BETTER PREPAREDNESS AND RESPONSE TO HEALTH CRISIS



The need for better preparedness and EU cooperation in health crises is a key lesson drawn from the COVID-19 pandemic. Climate change, habitat encroachment and deforestation, overpopulation and migration flows, world conflicts, vaccine hesitancy are destabilising environmental and social factors that are sources of zoonotic diseases and multidrug resistant microorganisms. This will increase the threats of more frequent and more lethal outbreaks. In this context, the EU needs and aims to be at the forefront of preparedness and response planning against serious cross-border health threats, with broad actions and a comprehensive approach in the new Health Union package.

The portfolio aims to:

Provide knowledge, tools and infrastructure to advance the European Health Union and support EU preparedness to prevent and respond to future health crises

Contribute to reinforcing EU strategic technological autonomy and resilience in the health sector and health-related industries, by leveraging advanced technologies for surveillance and medical countermeasures

Share knowledge and expertise in the domain of emerging health preparedness and response technologies, and network with digital and experimental research infrastructures

Time frame

In the **short term**, the portfolio will interconnect existing knowledge, technologies, and laboratory work that addresses multidisciplinary science and policy challenges of health crisis preparedness, in order to support the newly adopted Regulation on serious cross-border threats to health. Within a **long-term perspective**, it will provide cornerstone agile science to build the European Health Union and the prominent role of Europe in the new EU Health Security Framework and EU Global Health Strategy.

27



Health crises

Pandemics

Medical countermeasures

New technologies

Vaccines

Treatments

One Health

Strategic autonomy

Infectious diseases

Standardisation

Preparedness

Early detection

Early warning

Biological threats

Resilience

Delivering on anticipation, integration and impact of EU policies

- ▶ providing technology analyses and developing tools and mechanisms to help the EU and Member States anticipate, prevent, prepare and respond to future health crises,
- ▶ providing an agile science and technology platform to prevent and address (One)-Health crises affecting humans, animals or the environment,
- ▶ supporting European Commission's departments, Commission agencies and other relevant organisations in their mandate for early detection and warning of imminent biological threats.

MAIN PARTNERS

European Commission's departments

AGRI, ECHO, ENV,
HERA, RTD, SANTE

Selected stakeholders

ECDC, EFSA, EMA

INNOVATION IN LIFE AND HEALTH SCIENCES



We are witnessing an unprecedented acceleration of innovation in the life and health sciences, driven by the convergence and emergence of technologies, novel concepts and social developments. The data and AI revolutions, the bio-revolution – including new genomic techniques, omics and personalised medicine – are just a few such innovations. They will accelerate biomedical and life science research and deliver novel solutions for tackling disease. Innovations also have profound societal and ethical repercussions, including bias, healthcare equalities and security. Innovative technologies are often applicable to various fields, thus requiring a holistic approach.

The portfolio aims to:

Support the promotion and uptake of innovative approaches in life and health science research and healthcare

Ensure that transformative innovations are evidence-based and supported by risk-benefit-determinations, ethical and compatible with the European Way of Life

Help foster a multidimensional and interdisciplinary understanding of innovation and future regulatory and policy needs

28

Time frame

The roadmap of this portfolio comprises milestones for the identification of innovations, their assessment, translation, and anticipation of emerging technologies, setting its time horizon within **short-, medium- and long-term perspectives**. It aligns its current objectives with the policy timetables of partner European Commission's departments, while working on shaping future policy frameworks.



- Health science
- Life science
- Healthcare
- Digital health
- Health data
- Vaccines
- Artificial intelligence
- Ethics
- Innovation
- Biomedical research
- Cancer
- Rare diseases
- Antimicrobial resistance
- New genomic techniques

Delivering on anticipation, integration and impact of EU policies

- ▶ supporting the promotion and uptake of innovative approaches in life and health science research and healthcare, while ensuring that transformative innovations are ethical, fair and supported by evidence-based risk-benefit determinations,
- ▶ clarifying the principles to be respected for gathering, compiling and using data including through AI and exploring practical aspects of data exploitation for the development of innovations in healthcare and health research,
- ▶ identifying new genomic techniques and their applications in a variety of fields including micro-organisms, plants, animals, and humans with a view to risk assessment, monitoring, and anticipation,
- ▶ driving the standardisation and uptake of new models and methods in priority disease areas and biomedical research.

MAIN PARTNERS

European Commission's departments
CNECT, DEFIS, ENV, GROW, HERA, RTD, SANTE

Selected stakeholders
EFSA, EMA, ENISA, OECD, WHO

TACKLING CANCER AND OTHER NON-COMMUNICABLE DISEASES



Non-communicable diseases (NCDs) are the leading causes of morbidity and mortality in the EU and worldwide. Beyond the personal and emotional strain they put on patients, families, loved ones and carers, these diseases place a massive burden on health and social systems, drain governmental budgets, reduce workforce productivity, and hamper economic growth. To a significant extent they are preventable, and preventive and mitigating action can be taken to reduce their human and financial burden.

The portfolio aims to:

Provide evidence-based approaches to the prevention, screening, diagnosis, treatment and care of NCDs, including links to health determinants

Support the development of knowledge and expertise on cancer, rare diseases and other NCDs, and the raising of standards of prevention and care in the EU

Help Member States to develop the benefits of nuclear applications in medicine, to dismantle illicit trade of products that are harmful to health, such as psychoactive substances and counterfeit tobacco

Time frame

This portfolio has a **long-term perspective**. The Europe's Beating Cancer Plan, supported by this portfolio, sets ambitious goals to improve cancer prevention and care in Europe by 2025. The EU Knowledge Centre on Cancer aims to support both **current initiatives** (such as the Strategic Agenda for Medical Ionising Radiation Applications) to reach their objectives, but also to help, **in the long term**, to increase the EU's capacities and systems for prevention, early detection, treatment and care.

29

Non-communicable diseases

Cancer

Rare diseases

Radionuclides (radioisotopes)

Radiopharmaceuticals

Harmonisation

Health policies

Prevention

Screening

Diagnostic

Treatment

Care

Quality assurance

Health determinants

Drug and tobacco

Illicit trafficking

Nuclear medicine

Delivering on anticipation, integration and impact of EU policies

- ▶ supporting policies and monitoring of cancer and other non-communicable and rare diseases, and developing guidelines and requirements/indicators, systems and portals that help to raise standards, thereby reducing inequalities and disparities in cancer prevention and care in the EU,
- ▶ developing methods to produce radionuclides for medicine, securing their supply and standardising protocols for the synthesis and quality control of radiopharmaceuticals,
- ▶ supporting Member States to advance activities to connect and unleash the potential of nuclear applications in medicine, such as screening, treatment, and care for cancer,
- ▶ developing certified in-vitro diagnostic reference materials for non-communicable diseases, including standardisation support on Faecal Immunochemical Testing for colorectal cancer screening,
- ▶ helping Member States to dismantle the illicit trade of products that are harmful to health such as psychoactive substances and counterfeit tobacco.

MAIN PARTNERS

European Commission's departments

AGRI, CNECT, COMP, EAC, EMPL, ENER, ENV, ESTAT, GROW, HERA, HOME, JUST, MOVE, OLAF, REFORM, RTD, SANTE, TAXUD

Selected stakeholders

CERN, ECHA, EEA, EMA, ESA, EMCDDA, IAEA, WHO-IARC

SCIENCE FOR SECURITY



Security has emerged as a complex socio-political challenge in recent decades due to emerging hybrid threats, including those related to digital technologies and unconventional chemical, biological, radioactive, nuclear and explosive (CBRNE) agents. Terrorist attacks, organised crime activities – including cyber-enabled crimes – radicalisation and the systematic spread of disinformation are challenging the very foundations of democratic institutions and the European way of life. There is therefore a critical need to anticipate and manage risks of conventional, unconventional and hybrid threats, through timely and integrated policy responses.

The portfolio aims to:

Provide an integrated framework for scientific support to the Security Union Strategy across various policy areas, to address complex security challenges

Enhance the EU's capacity to develop integrated action plans for the prevention of and response to security crises

Better anticipate future security challenges and support a forward-looking approach for the Security Union Strategy beyond 2025

30

Time frame

The portfolio aims to support specific objectives under the Security Union Strategy. In the **short term**, the portfolio will contribute to the preparation of the next Security Union Strategy 2025, but its anticipatory ambitions as regard security challenges go **beyond this time frame**.



Hybrid threats

CBRNE

Digital technologies

Terrorism and radicalisation

Public space protection

Organised crime

Cyber-enabled crimes

Disinformation

Border management

Critical entities resilience

Law enforcement

Nuclear security

Security by design

Risk management

Security research

Delivering on anticipation, integration and impact of EU policies

- ▶ promoting the principle of security by design and providing integrated scientific support to various EU policy areas,
- ▶ strengthening security research and innovation in the fight against hybrid threats, organised crime, cybercrime, CBRNE agents, through the integration of technical knowledge in the security field with operational know-how,
- ▶ promoting cooperation and information-sharing between various security communities at national, European and international levels,
- ▶ anticipating future threats and mega-trends affecting the security landscape.

MAIN PARTNERS

European Commission's departments

CNECT, COMM, COMP, DEFIS, ECHO, EEAS, ENER, FPI, GROW, HERA, HOME, HR, JUST, MARE, MOVE, SANTE, TAXUD, TRADE

Selected stakeholders

CEPOL, EMCDDA, EMSA, EUAA, EU-LISA, EUMSS, Eurojust, Europol, FRONTEX

SUPPORT TO NUCLEAR COMPLIANCE ASSURANCE



Nuclear and other related EU and international legislation aims to protect EU citizens, the environment and industry. It is vital that the actions of both EU Member States and the Commission are fully compliant with legislation. Verification and control systems are necessary to verify compliance with the Euratom legal framework, the EU dual-use trade control legislation, and other relevant international treaties.

The portfolio aims to:

Support the EU to monitor and enhance compliance in the nuclear field, through innovative containment and surveillance technologies, nuclear material measurements, providing reference materials, improved use of data, competencies, tools and methods

Support stakeholders to ensure compliance with the Euratom Treaty and Directives (safety, waste), the EU strategic trade control framework, and the related requirements of the Nuclear Non-Proliferation Treaty and export control regimes

Positively impact society by identifying potential gaps where additional legislative guidance or capacity-building actions are needed to foster compliance with the legal framework for the peaceful use of nuclear energy

31

Time frame

This portfolio stems from [long-standing activities](#) supporting the Euratom Treaty. It will continue to support the [long-term commitments](#) on the compliance with the Euratom Treaty, the EU legal framework, and other international legislation in the field.



Nuclear safeguards

Containment and surveillance

Nuclear material
verification measurements

Nuclear reference materials

Nuclear compliance

Non-proliferation

Euratom

Dual-use

Data analysis

Strategic trade control

Safeguards by design

Capacity-building

Education and training

Nuclear waste

Nuclear safety

Environment

Energy

Delivering on anticipation, integration and impact of EU policies

- ▶ providing measurements, tools, methods and approaches for improving the efficiency and effectiveness of nuclear safeguards and non-proliferation activities,
- ▶ providing operational and in-field nuclear material measurements to safeguards authorities,
- ▶ supporting and assessing measurements and monitoring radioactivity in the environment and building materials, enabling Member States to comply with regulatory acts transposing Euratom directives,
- ▶ delivering technical and analytical support for the implementation of EU strategic trade controls,
- ▶ providing technical expertise and advice to support the implementation of the Euratom Directive,
- ▶ organising proficiency testing, reviewing Member State reports on the implementation of nuclear directives, capacity building, education and training,
- ▶ developing methodologies and best practices at EU level for performing workforce assessments of human resources in the nuclear area.

MAIN PARTNERS

European Commission's departments

EEAS, ENER, FPI, HOME, INTPA, NEAR, RTD, TAXUD, TRADE

Selected stakeholders

CEA, ESARDA, IAEA, JAEA, OECD-NEA, US DOE

CHALLENGES AND OPPORTUNITIES OF POPULATION DYNAMICS AND MIGRATION



The demographic transition is the third transition shaping the future of Europe after the green and digital transitions. In the coming years, the EU will have to address the impacts of ageing, demographic decline and labour market shortages. It needs an efficient migration management system. The EU's capacity to provide opportunities for all segments of society, from children and young people to the elderly and other vulnerable groups such as migrants, will be fundamental for promoting positive change. To do this, population dynamics, demographic change and migration need to be better understood.

The portfolio aims to:

Analyse EU and global population dynamics and their impact on various EU policy areas, including growth, employment, education, environment and health

Contribute to achieving an effective migration management system in the EU and deepen migration partnerships with third countries

Promote a more accurate and less polarised narrative on migration, based on evidence and data

32

Time frame

The portfolio has a **short- and medium-term perspective**, supporting current initiatives under the New Pact for Migration and Asylum, whose implementation goes beyond the current Commission mandate. The portfolio will also support the ongoing initiatives on demography and democracy.



Delivering on anticipation, integration and impact of EU policies

- ▶ developing tools to anticipate and monitor population movements and to adapt migration policy to new realities in a managed and sustainable way, in full respect of human rights,
- ▶ providing the Commission with evidence and data to address challenges of irregular migration, to secure legal migration pathways, design better integration policies for migrants and refugees, and deepen migration partnerships with third countries,
- ▶ improving the understanding of global population trends, their determinants and the opportunities that these demographic dynamics represent for different policy areas,
- ▶ making sense of scientific evidence and data to help translate it into more accurate and meaningful narratives on migration, and supporting evidence-driven communication on migration policy and on demographic change.

Population dynamics

Demographic change

Migration

Migration management

Asylum

Climate-related displacement

Legal pathways

Integration

Economic growth

Employment

Social policies

Inequality

Intergenerational justice

Development

Narrative

International partnerships

Ageing

Silver economy

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, ECFIN, ECHO, EEAS, EMPL, ESTAT, HOME, INTPA, NEAR, REFORM, REGIO, RTD, SG

Selected stakeholders

ICMPD, IIASA, OECD, UNDESA

INNOVATIVE POLICYMAKING IN A COMPLEX WORLD: SCIENCE, FORESIGHT AND EVALUATION FOR POLICYMAKING AND DEMOCRACY



The EU faces complex challenges that require the best available science and collective intelligence. More agile, creative, collaborative, efficient and democratic processes will help to address different governance levels across the EU. Anticipating trends and being equipped to deal with them, as well as the ability to understand and manage complexity, will create a more resilient EU, capable of renewing trust in democracy.

The portfolio aims to:

Provide guidance to different levels of governance in the EU on how to make decisions with the greatest impact using the best evidence and methods available

Strengthen European democracies by providing science, knowledge, and tools to improve and innovate policymaking.

Time frame

The activities and impact of the portfolio cover **different time horizons**. Within a **short-term perspective**, the portfolio contributes to the early identification and framing of new policy issues and the knowledge synthesis and management. At the same time, a **long-term** endeavour is to raise awareness and trust among key partners, while developing professional competences and generating relevant knowledge and innovative governance practices.

33



Delivering on anticipation, integration and impact of EU policies

- ▶ providing methodological support to integrate strategic foresight and collaborative approaches into the design of new initiatives,
- ▶ undertaking scientific development activities and performing targeted horizon scanning to identify possible new policy issues, bringing together quantitative and qualitative sources of information and methods,
- ▶ engaging scientists, stakeholders, citizens, other EU institutions and Member States in both the research and policymaking processes through participatory and deliberative processes, creating strong science-for-policy networks,
- ▶ developing and promoting the use of analytical tools to support policy development, monitoring and quantitative impact evaluation, including models, social multi-criteria evaluation, uncertainty and sensitivity analysis, field trials, impact evaluation and composite indicators and scoreboards,
- ▶ developing training and capacity building based on the ‘science for policy’ and ‘innovative policymaking’ competence frameworks, allowing a better use of data, evidence, strategic foresight, collaboration, community and citizen engagement, and science and policy communication.

Evidence-informed policymaking

Scientific development

Migration

Horizon scanning

Better regulation

Impact assessment

Impact evaluation

Integration

Behavioural insights

Foresight

Design for policy

Modelling

Composite indicators & scoreboards

Values and identities

Methodological support

Participatory democracy

Deliberative democracy

Citizen engagement

Art & Science

Social multi-criteria evaluation

Uncertainty & sensitivity analysis

Collaboration

Standardisation

Research infrastructures

Exploratory research

MAIN PARTNERS

European Commission's departments

AGRI, CLIMA, CNECT, COMM, COMP, DIGIT, EAC, EMPL, ENER, ENV, ESTAT, GROW, HERA, HR, JUST, MARE, OP, REFORM, REGIO, RSB, RTD, SANTE, SG

Selected stakeholders

EP, IAEA, OECD, OECD-OPSI

LIST OF PARTNERS

European Commission's departments

AGRI	Agriculture and Rural Development
BUDG	Budget
CLIMA	Climate Action
CNECT	Communications Networks, Content and Technology
COMP	Competition
DEFIS	Defence Industry and Space
DIGIT	Informatics
EAC	Education, Youth, Sport and Culture
ECFIN	Economic and Financial Affairs
ECHO	European Civil Protection and Humanitarian Aid Operations
EMPL	Employment, Social Affairs and Inclusion
ENER	Energy
ENV	Environment
ESTAT	Eurostat: European Statistics
EUSA	European School of Administration
FISMA	Financial Stability, Financial Services and Capital Markets Union
FPI	Foreign Policy Instruments
GROW	Internal Market, Industry, Entrepreneurship and SMEs
HERA	Health Emergency Preparedness and Response Authority
HOME	Migration and Home Affairs
INTPA	International Partnerships
JUST	Justice and Consumers
MARE	Maritime Affairs and Fisheries
MOVE	Mobility and Transport
NEAR	European Neighbourhood and Enlargement Negotiations
OLAF	European Anti-Fraud Office
RECOVER	Recovery and Resilience Task Force
REFORM	Structural Reform Support
REGIO	Regional and Urban Policy
RTD	Research and Innovation
SANTE	Health and Food Safety
SG	Secretariat-General
TAXUD	Taxation and Customs Union
TRADE	Trade

Stakeholders

ACER	Agency for the Cooperation of Energy Regulators	EUMSS	European Union Maritime Security Strategy
BIPM	International Bureau of Weights and Measures	EU-Rail	Europe's Rail Joint Undertaking
CEDEFOP	European Centre for the Development of Vocational Training	EUROCAE	European Organisation for Civil Aviation Equipment
CEN/CENELEC (CEN/CLC)	European Committee for Standardization and the European Committee for Electrotechnical Standardization	Eurofound	The European Foundation for the Improvement of Living and Working Conditions
CEOS	Committee on Earth Observation Satellites	Europol	European Union Agency for Law Enforcement Cooperation
CEPOL	European Union Agency for Law Enforcement Training	EUSPA	European Agency for the Space Programme
CERN	European Organization for Nuclear Research	FAO	Food and Agriculture Organization
CERP	European Committee for Postal Regulation	FRONTEX	European Border and Coast Guard Agency
CERT-EU	Computer Emergency Response Team for the EU institutions, bodies and agencies	GCOS	Global Climate Observing System
CHJU	Clean Hydrogen Joint Undertaking	GNSS	Global Navigation Satellite System
Clean H2	Clean Hydrogen	HADEA	Health and Digital Executive Agency
CoR	Committee of the Regions	IAEA	International Atomic Energy Agency
DERN	Digital Economics Research Network	ICMPD	International Centre for Migration Policy Development
ECB	European Central Bank	IEA	International Energy Agency
ECDC	European Centre for Disease Prevention and Control	IEC	International Electrotechnical Commission
ECHA	European Chemicals Agency	IIASA	International Institute for Applied Systems Analysis
ECMWF	European Centre for Medium-Range Weather Forecasts	IIOA	International Input-Output Association
EDA	European Defence Agency	IPCC	Intergovernmental Panel on Climate Change
EDPS	European Data Protection Supervisor	IPHE	International Partnership for Hydrogen and Fuel Cells in the Economy
EEA	European Environment Agency	IRENA	International Renewable Energy Agency
EFSA	European Food Safety Agency	ILO	International Labour Organisation
EIB	European Investment Bank	ISO	International Organization for Standardization
EIGE	European Institute for Gender Equality	ISOC-ERIC	Integrated Carbon Observation System
EIOPA	European Insurance and Occupational Pensions Authority	ITU	International Telecommunication Union
EISMEA	European Innovation Council and SMEs Executive Agency	JAEA	Japan Atomic Energy Agency
EIT-RM	European Institute of Innovation and Technology - Raw Materials	MS	Member States
ELLIS/CLAIRE	European AI communities	OECD	Organisation for Economic Co-operation and Development
EMA	European Medicines Agency	OECD-OPSI	OECD Observatory of Public Sector Innovation
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction	OECD NEA	OECD Nuclear Energy Agency
EMSA	European Maritime Safety Agency	SHAIO	Department of Applied Economic Analysis at the University of Las Palmas
ENISA	European Union Agency for Cybersecurity	UNCCD	United Nations Convention to Combat Desertification
ENOLL	European Network of Living Labs	UNDESA	United Nations Department of Economic and Social Affairs
ENRD	European Network for Rural Development	UNDP	United Nations Development Programme
EOSC	European Open Science Cloud	UNECE	United Nations Economic Commission for Europe
ERJU	Europe's Rail Joint Undertaking	UNEP	United Nations Environment Programme
ESA	European Space Agency	UNESCO	United Nations Educational, Scientific and Cultural Organization
ESADRA	European Safeguards Research and Development Association	UNFCCC	United Nations Framework Convention on Climate Change
ETF	European Training Foundation	UN HABITAT	United Nations Human Settlement Programme
ETSI	European Telecommunications Standards Institute	UNIDO	United Nations Industrial Development Organization
EUAA	European Union Agency for Asylum	US DOE	US Department of Energy
EU-LISA	European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice	WHO	World Health Organization
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites	WHO-IARC	International Agency for Research on Cancer
		WMO	World Meteorological Organization



JRC portfolios

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