technological leadership and innovation capability of firms Need to strengthen the

Insufficient cross-border coordination

OVERALL OBJECTIVE OF **HORIZON 2020**

Contribute to building a society and an economy based on knowledge and innovation across the Union by leveraging additional R&D&I funding and by contributing to attaining R&D targets, including the target of 3 % of GDP for R&D across the Union by 2020, It shall thereby support the implementation of the Europe 2020 strategy and other Union policies, as well as the achievement and functioning of the European Research Area (ERA).

ERA priorities

research systems

co-operation and

An open labour market for researchers

Gender equality and

transfer of scientific knowledge

Contribution to **Europe 2020 Strategy**

Smart, sustainable and

Contribution to EC

priorities Jobs, growth and

investment An energy union with a forward-looking climate policy A stronger global actor The creation of a digital

INPUTS

Financial support to indirect actions: grants, prizes, procurement and financial instruments.

Financial support to direct actions undertaken by the JRC

Financial costs incurred for expert groups, studies, events Programme management (IT, technical and administrative

expenses incurred by EC services, incl for communication)

ACTIVITIES

I Excellent Science (investigator driven)

tience-driven and largely 'bottom-up' activities which are forward-looking, building skills in the long term, focusing on the next generation of science, technology, researchers and innovations and providing support for emerging talent from across the EU and ssociated countries, as well as worldwide.

II Industrial Leadership (business driven)

Activities following a business- and SME-driven agenda, based on a demand-driven, bottom-up logic (SME instrument) Budgets complemented by use of financial instruments

LEIT following a technology-driven approach to develop enabling technologies that can be used in multiple areas, industries and services.

III Societal Challenges (top-down)

Seven societal challenges covered

Activities covering from basic research to market, with a focus on innovation-related activities, such as piloting, demonstration activities, test-beds, support for public procurement, design, enduser driven innovation, social innovation, knowledge transfer and market take-up of innovations and standardisation

Non-technological, organisational &systems innovation as well as public sector innovation and technology-driven solutions. Bringing together critical mass of resources and knowledge across different fields, technologies and scientific disciplines and research infrastructures in order to address the challenges

IV Spreading Excellence & Widening **Participation**

Teaming, twinning, ERA-Chairs, Policy Support Facility, better ccess of researchers & innovators to international networks support to COST), NCPs; synergies with other policies and orogrammes

V Science with and for Society

Attractiveness of scientific careers, gender equality, integration of citizens' interests and values in R&I, science education, accessibility and use of research results, governance for the advancement of responsible R&I and promotion of an ethics ramework for R&I, anticipation of potential environmental, health & safety impacts, and improved knowledge on science

Cross-cutting activities/Focus areas

Fast Track to Innovation (pilot)

Bottom-up measure for close-to-market innovation activities

Cross-cutting support to specific issues

Sender equality, responsible research and innovation, nternational cooperation, social sciences and humanities, SME participation, sustainable development, biodiversity and fight gainst climate change, Digital Agenda

Non-nuclear direct actions of JRC

Provision of evidence for EU policies - driven by customer needs, omplemented by forward-looking activities

European Institute of Innovation and Technology

Knowledge and Innovation Communities bringing together the nowledge triangle

EXPECTED OUTPUTS

By project's end (1-10 years)

Human capital development

Researchers trained (inc. PhD, post-docs, gender balanced) Mobile researchers (cross-border and cross-sector)

World-level researchers attracted to EU

Educational material and curricula for Responsible R&I

Gender dimension integrated in projects

Provision of information on R&I jobs and training (incl EURAXESS services)

Institutional changes within research organisations to implement the European Research Area priorities

Gender Equality Plans (GEPs) in RPO and RFO

Research infrastructures

New research infrastructures built

Better access to research infrastructure

World-class researchers attracted to existing research

Creation of new (or upgrading of existing) Centres of Excellence in low R&I performing MS and AC

Partnerships & international openness

Scientific collaboration across disciplines on new, high-risk ideas Cross-country (also beyond EU) and cross-disciplinary research

and innovation networks (incl. SMEs) Set-up of Knowledge and Innovation Communities gathering

research, innovation and higher education

Networks of developers, providers and users of solutions involved in cocreation (value chain)

Outputs for knowledge transfer

Study results and reports

Formal publications

Research data provided in open access

Intellectual property (incl. patents) Data Management Plans (Pilot on Open Research data)

Conferences/ workshops papers and proceedings Project's websites

Public-Private Information material for user communities Partnerships (incl JTI-JPI)

Conferences.

events

Expert

Public

studies

ntracts/groups

curement for

ERC Frontier

research

grants

Future and

Emerging

schemes

MSCA grants

Research

infrastructure

Access to risk

finance (with

EIB/EIF)

SME

Instrument

Research &

innovation

actions

Innovation

procurement

(PCP/PPI)

ordination and

upport Actions

ERA-NET Co-

Fund

Specific Grant

Agreement

European

Joint

Programme

Co-Fund

Art. 185

Other actions

(incl prizes,

subscriptions)

Technical/

scientific

services

KICs and EIT

Early outputs for subsequent innovation

New, altered or improved research tools & techniques, models

New advanced capabilities, methods, systems, infrastructures and New, altered or improved ideas, products, designs, processes,

services and business models Innovation actions

Outputs for research or market integration

Joint databases, platforms, testbeds

New common methodologies

New or improved standards

Deployment of advanced ICT in manufacturing sector

Closer to market outputs

Proof of scientific & technological feasibility Awareness on market and end-user needs

Demonstrators of innovative solutions

Business plans

New context-adapted solutions (technological & non-

technological e.g financial, regulatory or business models) Innovative processes, products& service delivery systems

Projects having sought additional or follow-up funding - private or public - incl. from regional/national schemes

Outputs for wider society

New or improved ethical standards or guidelines

Science and innovation awareness raising activities (incl science shops science cafés exhibitions)

Policy outputs

Advice/recommendations for policy making

Joint calls launched between national authorities Policy dialogues, mutual learning exercises (incl exchange of best

practices) and studies (incl with local authorities) Strategic planning and implementation of policy and programmes at regional and national level

Strategic planning, networking and coordination between programmes in different countries

Public procurement of research, development & validation of new

EXPECTED RESULTS

From projects' outputs + up to 5 years

Strengthened R&I capacities/excellence

Reinforced single market for researchers

Improved attractiveness of researchers' careers across the EU

Strengthened human potential in R&D in business and academia (incl gender balance) across

Reputation and excellence of Europe in scientific and technological research (modernisation of research institutions, vitality of research environment, quality of research outputs in basic & applied research)

Reinforced innovation potential of EU research infrastructures

Scientific breakthroughs spurring innovation across sectors

Enriched and consolidated evidence base about the cost-effectiveness, up-scalability and market up-taking potential of the tested solutions

Better R&I integration

Stronger pan-European collaboration across disciplines, sectors, value chains & technology levels

Interconnected European data infrastructures

Accelerated open data sharing and use in Europe

mproved scientific capabilities of widening countries to improve their chances to seek competitive funding in international fora

Diffusion of innovation in products, services, processes

Portfolio of demonstrated replicable, up-scalable and "contextualisable" innovative solutions All forms of innovation that enable the transition to more sustainable economies fostered incl through digital systems

Improved market uptake and replication of tested technologies

Solutions brought closer to market (increase in TRL)

improved cost-effectiveness and sustainability of solution

Improved manufacturing processes & equipment of EU industry approved time-to-market for European manufacturers and service providers

improved sustainability across the entire product-service lifecycle

Increased digitisation of industry and economy New and better product-service offerings addressing customer needs

Creation of smart global value chains that enable value capture to Europe

Jobs, growth & competitiveness of participants (incl. SMEs)

red innovation capability and competiveness of European enterprises in global market for innovative solutions (esp. SMEs)

Jobs maintained and created in business and academia

New business entities created or improved performance of existing businesses

Opening up of new markets for participants

Growth & internationalisation of participating SMEs

Strengthened framework conditions for R&I

Leveraged private and public investment in R&I

Leveraged demand for solutions for tackling societal challenges

More innovation conducive regulatory frameworks Innovative financing, business and governance models for innovative solutions adopting trans-disciplinary and participatory approaches and promoting citizens' engagement (co-

ncreased availability of debt & equity finance for R&D and innovation-driven companie

Social and environmental outcomes

Improvement of societal awareness, understanding and engagement to tackle societal challenges through R&I

Better societal acceptance of innovative solutions

Increased awareness of the new innovations among industry, research, user and policy Reinforced research integrity and ethics standards

More effective promotion of gender equality and the gender dimension in research and

Responsible R&I principles embedded in EU Higher Education

Improved environmental performance (climate change, biodiversity, sustainability) Improved quality of life

Reduced direct and indirect costs linked to societal issues

mproved research and innovation culture in EU

Innovation in policy-making

Better informed decision-making by authorities & companies at the EU and global levels

Better alignment/synergy of regional/national/EU and international R&I efforts More responsible research and innovation

Better R&I policy-making capacities (national R&I reforms)

International positioning

Enhanced position & role of the EU R&I in international R&I arena

Increased international research cooperation and international relations through science Strengthened synergies with the EU's external policies and with the actions of Member States

EU leading multilateral initiatives and working with international organizations to tackle global societal challenges

Contribution to EXPECTED IMPACTS From projects' outputs + up to 20 years

Scientific impacts

EU world-class excellence in science

Better cross-border & cross-sector coordination & integration of R&I efforts

Emergence of new technologies or field of science in the EU

Innovation/economic impacts

Better innovation capability of EU firms

EU technological leadership & strengthened competitive position of **European industry (incl. SMEs, start-ups**

Diffusion of innovation in the economy (incl. in SMEs) generating jobs, growth and investments

Societal impacts

Better contribution of R&I to tackling societal challenges

Stronger global role of the EU, steering the international agenda to tackle global societal challenges

Better societal acceptance of science and innovative solutions

OTHER EU POLICIES

ESI Funds

Erasmus+ programme LIFE Programme Other EU thematic policies

Socio-economic condition affecting the availability of funding at EU, national, regional,

local level (public and private) Common Agricultural Policy Volatility of prices of energy & COSME

MS policy, legislation and/or regulatory framework EU external and developmen

International agreements, in particular UN's 2030 Sustainable Development Goals

EXTERNAL FACTORS

internal market

science base

More effective national

Optimal transpational competition

gender mainstreaming in research Optimal circulation and

inclusive growth