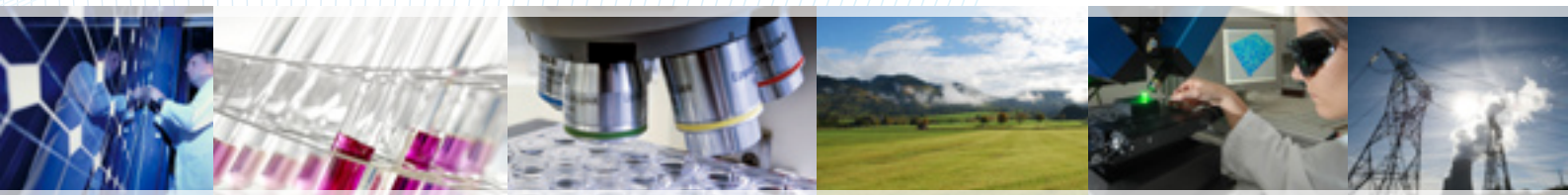


JOINT RESEARCH CENTRE
European Commission

JRC Strategy 2010-2020: Summary



European Commission
Joint Research Centre

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Foreword from the Commissioner for Research, Innovation and Science



As the Commissioner responsible for the Joint Research Centre (JRC) I am delighted to introduce the **JRC Strategy 2010-2020**. This strategy represents a real leap forward for the JRC. It follows extensive consultation with stakeholders and incorporates the recommendations of an assessment group chaired by Sir David King. The JRC has developed from its nuclear beginnings under the EURATOM Treaty. It diversified into other scientific areas in the 1980s and has been closely associated with EU policy making in the last decade. The time has now come for a new era in the development of the JRC as encapsulated in its new vision statement “**to be a trusted provider of science-based policy options to EU policy makers to address key challenges facing our society, underpinned by internationally-recognised research.**”

This development comes just as the EU is starting to implement its **Europe 2020 strategy**, which is designed to lead Europe out of the economic crisis and turn it into a world leader in smart, sustainable and inclusive growth. Research and Innovation are key to our reaching these goals, which is why I will present a multi-annual Research and Innovation Plan for Europe that will essentially be the cornerstone of a **European Innovation Union**. I am pleased that the JRC with its new strategy takes the responsibility for underpinning both Europe 2020 and the Research and Innovation Plan with the integrated science needed. At the same time, it will continue to meet its legal obligations and deliver the technical support required for other policy areas of major concern for Europeans, for example in the field of safety and security. In particular, I welcome the move to provide more socio-economic research and policy analysis and to establish the horizon scanning and foresight capacity needed to prepare the Commission for issues that might not yet be on its radar.

In addition, I am convinced that the “new JRC” will play an important role in the maturing of the **European Research Area (ERA)**, which in turn is essential to Europe 2020. The JRC will contribute through mobility and training, the further opening of its research infrastructures, its participation in Joint Programming in research, knowledge transfer including open access to JRC databases, and support for connecting the ERA with the wider world.

In a globalised economy with complex societal challenges and rapid technological progress, the European Commission more than ever needs the services of a world-class research organisation capable of adapting and delivering integrated solutions. In order to make this happen I will ensure that the JRC is equipped with the tools and the flexibility to attract the most brilliant talents from across Europe and beyond.

In implementing this strategy, I am confident that the JRC will play an integral part in creating an economy based on knowledge and innovation, improving competitiveness and stimulating growth that is greener and delivers the jobs of the future.

Maire Geoghegan-Quinn
Commissioner for Research, Innovation and Science

Foreword from the JRC Director-General and the Chair of the Board of Governors



In 2009, the JRC undertook the challenge of reinvigorating its organisation by the creation of a new vision and strategy for the period 2010-2020. This was necessary to address key societal challenges or so-called ‘grand challenges’ facing the EU and the world, for which the approach requires integrated, pro-active and cross-policy action. The JRC Strategy thereby aligns itself with the Europe 2020 strategy and the Commission’s research priorities for the years to come.



The strategy process was initiated through a combined bottom-up and top-down consultation process. The JRC Senior Management established the priorities for 2010-2020. Twelve Expert Working Groups composed of 150 scientists and administrative support staff across the JRC representing core competence areas, prepared reports on thematic challenges and customer needs for future science-based policy support.

This strategy envisages addressing the Grand Challenges with increased attention to providing policy options to key customers instead of focusing solely on sectoral policy support and analysis. The JRC Strategy 2010-2020 has been extensively consulted with the JRC staff, the European Commissioner for Research, Innovation and Science and her Cabinet, the European Commission’s Secretary General, key customer Directorates General, the JRC Board of Governors, and the European Parliament.

The proposed strategy represents significant challenges for the JRC; it identifies new goals and objectives and sets a scheme for better addressing policy options at EU and global levels. An implementation plan will include a new programme-oriented management approach. The new strategy will position the JRC with regard to the Commission’s 8th Research Framework Programme and Europe 2020 strategy. Elements will be introduced into the JRC’s work programme via the implementation plan over the next two years with a view to being well on the way towards realising the new JRC profile at the onset of the 8th Framework Programme. This strategy will be reviewed in 2013 and 2016 with potential modifications driven by policy changes in the EU, while the implementation plan will be updated annually.

We wish to sincerely thank all those who have generously contributed their time, energy, enthusiasm and ideas to the evolution of the new JRC Strategy and we especially acknowledge the important contributions and support of the JRC Board of Governors.

Roland Schenkel
Director General JRC

Killian Halpin
Chairman, JRC Board of Governors

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Executive Summary

This strategy describes the JRC's response to the challenges faced by Europe and worldwide and for which the JRC has the capacity, legal obligation and competences to act. The JRC's response to the grand challenges leads to the definition of a **new profile for the JRC** with a new dynamic vision for 2010-2020, as a major driving force behind the strategy.

JRC Vision

The JRC's vision is to be a trusted provider of science-based policy options to EU policy makers to address key challenges facing our society, underpinned by internationally-recognised research.

The new vision of the JRC as a provider of **science-based policy options** implies a number of strategic developments to allow the JRC to position itself to deliver policy support and policy options:

- *Competences in economic and socio-economic research* will be expanded and integrated with natural science and engineering-based approaches.
- Complex and long-term challenges will be addressed by multi-disciplinary research teams integrated across the JRC via Thematic Areas.
- *Economic and policy analysis and related impact assessments* will receive increased emphasis.
- The well-established customer-driven approach will be complemented by a strong forward-looking, horizon scanning capacity.

The JRC's research programme will thus provide more integrated, cross-policy support on complex issues.

In line with the Europe 2020 and the European Research Area (ERA) strategy, the JRC will focus its activities to deliver integrated policy options to its customers. The JRC will concentrate on **seven Thematic Areas** in which the JRC will strive to be pivotal in the policy process:

1. Towards an open and competitive economy
2. Development of a low carbon society
3. Sustainable management of natural resources
4. Safety of food and consumer products
5. Nuclear safety and security
6. Security and crisis management
7. Reference materials and measurements

In developing these Thematic Areas, the JRC will follow a programme-oriented approach, with a management structure that fosters over-arching objective-setting to deliver high quality scientific support to EU policy and the development of policy options. The JRC will prioritise its resources to achieve its strategic objectives across the Thematic Areas as a service to its customers. The JRC will also engage in new and emerging areas of research driven by scientific and technological advances, the emergence of societal issues or new policy developments whose selection will be based on horizon scanning activities carried out in close collaboration with customers.

The JRC Today

The Joint Research Centre (JRC) as one of the Directorates-General (DGs) of the European Commission (EC) provides customer-driven scientific and technical support for the conception, development, implementation and monitoring of European Union policies. Its seven research institutes are distributed across five sites in Europe with its headquarters located in Brussels.

The adoption of the new mission in 1998 established a customer-driven approach and emphasised the unique character of the JRC as a 'reference centre of science and technology for the Union'. Reference activities include pre-normative research, validation of testing methods, harmonisation of measurement methods, development

of indicators, benchmarking of best practices, verification of compliance, establishment of norms and standards, and the development of reference methods and materials. For many of these activities, the JRC is mandated explicitly in legislation or the Lisbon Treaty.

JRC Mission

The mission of the Joint Research Centre is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of European Union policies.

As a service of the European Commission, the Joint Research Centre functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

The JRC has around 2750 permanent and temporary staff with an annual institutional budget of ~350M€. It is active in the policy areas of energy, transport, environment, climate change, competitiveness, safety of food and consumer products, security, crisis management, and nuclear safety and security. The principal customers of the JRC are the policy-making Directorates-General of the European Commission, in particular

Energy, Mobility and Transport, Enterprise and Industry, Climate Action, Environment, Agriculture and Rural Development, Health and Consumers, and Research, Technology and Development. The JRC also provides scientific-technical support to other EU institutions such as the European Parliament. The JRC cooperates with relevant EU agencies through exchanging data and information, providing informatics tools and risk assessment models. It provides support to the Member States in areas where it has a special competence (e.g. environmental and civil crisis management, anticipation, nuclear forensics and damage assessment). In the frame of the EU's enlargement, the JRC also assists accession and candidate countries in the take-up of the body of EU law.

The JRC Tomorrow

The new JRC vision

The JRC's new vision statement encapsulates its ambition to focus increasingly on defining and assessing science-based policy options with customer Directorates-General. This supports the EU policy process to make well-informed choices which take into account state of the art knowledge in science and technology. The JRC aims to move to a *higher level of performance and quality in the wider policy arena by being more pro-active and providing more integrated support.*

The JRC bases its strategy on the need to meet the grand challenges facing the EU and world as defined by the Lisbon Treaty and the Europe 2020 strategy, and specifically to support the strengthening of the European Research Area (ERA).

JRC Vision

The JRC's vision is to be a trusted provider of science-based policy options to EU policy makers to address key challenges facing our society, underpinned by internationally-recognised research.

In order to be more pro-active, the JRC will develop its capacity to anticipate future policy-relevant areas potentially requiring action. The JRC will therefore initiate a corporate capacity to provide **horizon scanning and foresight intelligence**. This will include:

- Scanning of the scientific landscape and alerting the JRC community, networks and customers to significant developments of policy relevance.
- Providing in-depth studies using foresight methods and analysis in selected areas with the support of expert networks from Member States and the international scientific community.
- Providing support to policy DGs and other EU institutions when joint interests call for systematic investigations of new or critical areas of work.

This capacity will support the further development of the JRC, consequent work programmes and where relevant provide input to other Commission services. It will enable the identification and monitoring of emerging scientific, technological or policy areas that the JRC and policy DGs may want to address in the years ahead. The horizon scanning and foresight activity will use JRC competences, experts from other Commission services, and experts from outside organisations.

The new strategy puts the JRC in a key position to provide scientific support to the Chief Scientific Adviser (CSA) to the European Commission, whose creation was announced by the Commission President during his presentation in the European Parliament on 15 September 2009. With the JRC, the Commission has at its disposal an internal organisation whose mandate is precisely to provide scientific-technical advice independent of private and national interests and which covers a broad range of policy issues. With the JRC focusing more in the future on cross-policy issues and policy options, it could assist the Chief Scientific Adviser to discharge his/her responsibility to provide advice which integrates scientific evidence from (all) relevant fields. The proposed

corporate anticipation and horizon scanning function at the JRC will enable the Chief Scientific Adviser to ensure that his/her advice is forward-looking. The JRC has set up an internal mechanism to serve the adviser. The fast action response capacity of the JRC to respond with its multi-disciplinary competences in a timely manner to crises and unexpected events would be an important contributor to achieving the objectives set out for the CSA .

Europe 2020 and the new challenges facing the EU

In recent years, and accentuated by the economic and financial crisis, complex global issues have moved to the forefront of EU policy making. Grand challenges such as global warming, energy supply and security, poverty, water scarcity and quality, food supply and quality, ageing society, public health, international terrorism and changes in the world economy have social, economic and environmental implications that affect the EU and the world. The grand challenges cut across different policy domains and hence cannot be addressed from a specific sectoral point of view alone. Grand challenges should seek to inspire action in key areas and they should promote closer alignment between research that is carried out at EU level and support for EU policies.

The **Europe 2020** strategy sets the priorities for the present Commission. It is aimed at turning the EU into a “smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion”. Seven flagship initiatives are defined within the Europe 2020 strategy which together meet the overall objectives:

- Innovation Union
- Youth on the move
- A digital agenda for Europe
- Resource efficient Europe
- An industrial policy for the globalisation era
- An agenda for new skills and jobs
- European platform against poverty

The Europe 2020 strategy provides the EU with an integrated blue-print for transforming itself into a sustainable social market economy over the coming decade. The main goal of Europe 2020 will be for Europe to prosper as a knowledge-based more inclusive economy, open to the world, growing fast and sustainably and creating high levels of employment while maintaining high social standards.

The JRC Thematic Areas and horizontal activities

In line with the Europe 2020 and the European Research Area (ERA) strategy, the JRC will focus its activities to deliver integrated policy options to its customers. The JRC will concentrate on **seven Thematic Areas (TA)** in which the JRC will strive to be pivotal in the policy process:

TA 1. Towards an open and competitive economy

by contributing to the goals of the Europe 2020 strategy through providing integrated socio-economic and policy support to macro- and micro-economic policies, the structural reform agenda, employment, the education and skills agenda, the digital agenda, and research and innovation (“European Innovation Union”).

TA 2. Development of a low carbon society

by addressing energy, transport, clean production technologies and consumption patterns, issues that will be central to the progressive transition of the EU towards a low carbon society.

TA 3. Sustainable management of natural resources

by addressing issues related to the sustainable management and use of strategic resources such as food, water, air, minerals, energy and land.

TA 4. Safety of food and consumer products

by contributing to the development of European legislation on safety of food and feed, and on other new consumer products.

TA 5. Nuclear safety and security

by providing independent and reliable scientific and technological assessment on nuclear safety of present and future generations of nuclear reactors, on the safety of the nuclear fuel cycle and nuclear safeguards, non-proliferation and nuclear security issues.

TA 6. Security and crisis management

by contributing to the development of new technological approaches to enhance the security of the citizen, including support to crisis management.

TA 7. Reference materials and measurements

by maintaining a strong reference role in the area of standards and reference measurements.

The Thematic Areas strongly contribute to the goals of the **Europe 2020 flagship initiatives**. The first Thematic Area covers almost all the policy goals associated with Europe 2020 with a special focus on ‘Smart growth: an economy based on knowledge and innovation’ while the second, third and fifth contribute strongly to the priority ‘Sustainable growth: promoting a more resource-efficient, greener and more competitive economy’ with its focus on transport, energy, climate, environment, agriculture and fisheries. Thematic Areas 4 and 6 are focused on the protection of the citizen, areas in which the JRC has particular competences and mandates.

Policy options

The delivery and assessment of policy options and integrated S&T support on cross-policy and multi-disciplinary issues to EU policy makers are principal goals of the JRC Strategy 2010-2020.

The JRC will select in consultation with the customer DGs a range of applicable policy options and then perform scientific assessments of the pros and cons of those options. The JRC will ensure that the latest and best scientific knowledge is applied to policy scenarios and will communicate clearly to policy makers the results of policy option analysis and the choices available.

An example: Delivering policy options – the case of biofuels

The EU policy on **biofuels** touches upon a range of issues of public interest: energy, agriculture, climate, trade, development aid and transport. This issue of **energy** will be tackled by the goal of reaching 20% renewable energy usage by 2020 and a binding 10% of biofuels in transport.

The field of **agriculture** may experience competition between growing crops for food production or for fuel. The **climate** may be impacted by the emission of greenhouse gases from the cultivation and processing of biocrops. **Trade** may be affected by adjustments and/or disruption to agriculture commodity markets. A possible impact on direct and indirect changes to land use (e.g. tropical deforestation) could affect **development aid**. Finally, the **transport** sector may have to adapt to the new technologies, innovation, efficiencies and emissions associated with the new fuel targets.

Many of the policy objectives hinge upon a call for the production of biofuels to be sustainable. In this case, sustainability represents a particular challenge because it requires the integration of many, and often diverging, parameters. The quantification of impacts is especially sensitive because of the many stakeholders along the production chain. Because of its international dimension, the practical implementation of possible sustainability schemes is also sensitive to national and local situations.

The JRC Biofuels Task Force, which groups experts across the JRC, produces independent analyses that deal with the greenhouse gas issues of biofuel cultivation and production, the contribution to the security of energy supply, and the potential impact on agricultural commodity markets and employment. Using models of world agricultural markets, it offers comparison between models predicting the indirect land use effects of an expansion of biofuel production for Europe. In several cases, analyses have shown that the impacts of biofuel policies are not necessarily those expected by the policy makers (e.g. with respect to the share of biofuels in transport which would be difficult to sustainably achieve if one considers that, in a global context, the emissions for all biofuels are likely to exceed the direct greenhouse gas savings). This fact mandates an exploration and integration of a range of options that satisfy or, if necessary, help in adjusting the political objectives.

Enhanced customer interface

The JRC will extend its current networking to provide a broader scope of policy support. The JRC is able to respond strategically, flexibly and timely to the needs of its customers.

- The JRC will integrate its competences to deliver a more complete service to its customers. The Thematic Areas will establish both the relevant strategy and the work programmes.
- The Directors leading the Thematic Areas will act as the high-level interface with customers.
- The relevant customer Directorates-General will be included at senior level in a Customer/Stakeholder Board for each Thematic Area, thus shaping more directly both the strategic objectives and the operational work programmes of the Thematic Areas.
- The JRC will include customer DGs in its corporate horizon scanning and foresight function to identify technological, environmental and societal developments which may require policy action in the future. This will help to shape the work of both customer DGs and the JRC.
- Bi-lateral discussions with relevant Directors, Heads of Units and Desk Officers in customer DGs will continue as today because this provides key exchanges on issues where both parties have competence and direct responsibility.
- The JRC will establish a close relationship with the Bureau of European Policy Advisers (BEPA) and the Chief Scientific Adviser to the European Commission.

The JRC Strategy will continue to contribute to the needs of the Member States and the European Research Area, inter alia through the advice of its Board of Governors, via assistance provided to Candidate Countries, through Certified Reference Laboratories as a reference function of the EU, by providing scientific training to graduate students, postdoctoral fellows and others requesting training in areas of JRC competence, and by providing a rapid response to certain crises, e.g. forest fires, floods, droughts or earthquakes.

The JRC interacts with the European Parliament through an Interface Working Group, the Committee on Industry, Research and Energy (ITRE), and STOA (Science and Technology Options Assessment), and provides scientific support to the Parliament in response to ad-hoc requests (e.g. biofuels, genetically modified organisms).

Delivering the JRC Strategy

The new JRC vision sets the long-term strategic context for the organisation - the evolution towards being a provider of *science-based policy options*, and being more involved in the early, agenda-setting part of the policy cycle. This has several strategic implications for the future ways of working:

- Present and future competences will be deployed in a broader policy analysis context than in the past. This demands further **integration of economic and socio-economic dimensions** within the technological and scientific approach.
- Developing policy options requires the capacity to elaborate, test and describe plausible scenarios, which may result from different boundary conditions or evolving political/societal needs. More specifically, in its research the JRC will pay particular attention to analysis **that cuts across the various Thematic Areas**. Accordingly, the JRC will establish effective structures and mechanisms for cross-JRC management and create an environment that encourages scientists to work in a more integrated manner.
- The JRC will establish a corporate function with the goal of providing anticipatory intelligence through **corporate horizon scanning, foresight activities** and analyses to efficiently support the JRC future areas of work and consequent work programme activities.
- The integration of socio-economic and sustainability competences will utilise **modelling competences and modelling platforms**. These will be both sectorally oriented and integrated across policy domains such as economic dimensions, energy, sustainability, environment, climate change, transport, safety and security. The JRC will provide the framework with modelling platforms to integrate across these complex policy issues. The Thematic Areas will cooperate closely on topics of common interest, especially on the many topics where environmental factors and technological change involve socio-economic analyses.
- The JRC will seek to **open further its extensive data bases**, where appropriate and legally possible, to research institutions, the public and industry to encourage innovation.
- The JRC recognises that **its employees are its primary asset**. Recruiting quality staff and providing a supportive environment, in which to work and live, leads to better scientific productivity, delivery of the JRC mission and vision, and a supportive social ambience. The JRC will implement a **rolling multiannual recruitment plan** which will ensure that the JRC can hire the right people at the right time.
- An **infrastructure development plan** will be finalised to guide the decisions on the investment in, the phasing out of, or the modification of experimental facilities. At the same time the JRC will assess the feasibility of its participation in facilities being set up under the umbrella of the European Strategy Forum on Research Infrastructures (ESFRI). The challenge for the JRC is to secure its role as a research organisation on a par with its science partners by investing in computing and communication facilities with state of art capability, performance, reliability and flexibility.

- The JRC will strengthen its scientific collaborations with major international countries such as major industrialised countries and emerging economies. To this end, the JRC will further develop its support to international bodies such as the United Nations and the OECD, and team up with other major international partners. The JRC will **reinforce its strategic partnership with other key research organisations**, and foster cooperation with non-EU countries.
- The JRC will build on its contribution to the European Research Area in a number of areas linked to its building blocks. The JRC will participate when it provides added value, a European dimension, avoids duplication of other recognised activities, and when the area falls within JRC competence.

The JRC will also maintain its role in **supporting customer-driven requests** for policy support, including in sector-related EU legislation to ensure **continuity** in key policy areas.

Monitoring and Review of the JRC Strategy

The JRC will utilise three layers of evaluation to monitor performance, impact and progress in achieving the objectives of the strategy: internal review (resources; output/impact); external thematic review; and customer review.

The JRC will develop a set of indicators as part of the implementation plan to answer the question: “When will we know whether the JRC Strategy has been a success?”

The following categories of questions will be addressed through appropriate indicators:

- Resource deployment (via internal review)
- Impact of policy support per Thematic Area (via internal review)
- Functioning and effectiveness of Thematic Areas (via internal review)
- Delivery of policy options (via customer review)
- Customer satisfaction (via customer review)
- Functioning and effectiveness of horizon scanning and foresight function (via customer and external review)

Helping to Shape the EU

The JRC in putting forward its Corporate Strategy 2010-2020 “Integrating Robust Science for Policy Making” has set for itself goals which are challenging, reachable and greatly needed to pave the way for the achievement of the Europe 2020 objectives.

Based on its roots in the Euratom Treaty and its expertise and reputation built up over decades in a wide range of thematic areas, the JRC is ready to evolve over the next years into an enhanced scientific organisation ready to fulfil its new vision to “**be a trusted provider of science-based policy options to EU policy makers to address key challenges facing our society, underpinned by internationally-recognised research.**”

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policymaking process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

The JRC's vision is to be a trusted provider of science-based policy options to EU policy makers to address key challenges facing our society, underpinned by internationally-recognised research.

Robust science for policy making

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