



The European Commission's science and knowledge service

Joint Research Centre

JRC STRATEGY 2030



Joint
Research
Centre

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1 Changing Commission, changing DG JRC

The Commission has changed a great deal in recent years. It is more focused on a smaller number of priorities, among them the Energy Union and the Digital Single Market. The appointment of the First Vice President and the other Vice Presidents has helped to strengthen this focus, and has also marked a shift towards more integrated policy making. Commissioners in project teams are working more closely together, cutting across policy silos.

Aligned with this, the Commission has been modernised, to make it more integrated, efficient and capable of 'joined up' policy making.

There is more emphasis than ever on better regulation. The Commission is strengthening its approach to impact assessment. It is also devoting more attention to reviewing existing laws to see what can be simplified and improved.

As part of the drive to deepen economic and monetary union (EMU), the European Semester is being progressively strengthened. This will accelerate structural reforms in the Member States. The aim is to achieve upward economic and social convergence between and within Member States. There is also a very strong focus on the single market to improve investment conditions in the EU.

These changes have been set in motion by President Juncker. They are far-reaching, so will almost certainly endure beyond his term in office. Equally, resource pressures will continue to increase.

The long-term trends are therefore clear. More and more policies require a solid evidence base. This gives DG JRC, as the Commission's knowledge and science service, a very clear mandate. The opportunities for it to add value to the Commission are immense.

However, to serve this changing Commission, DG JRC has to change too:

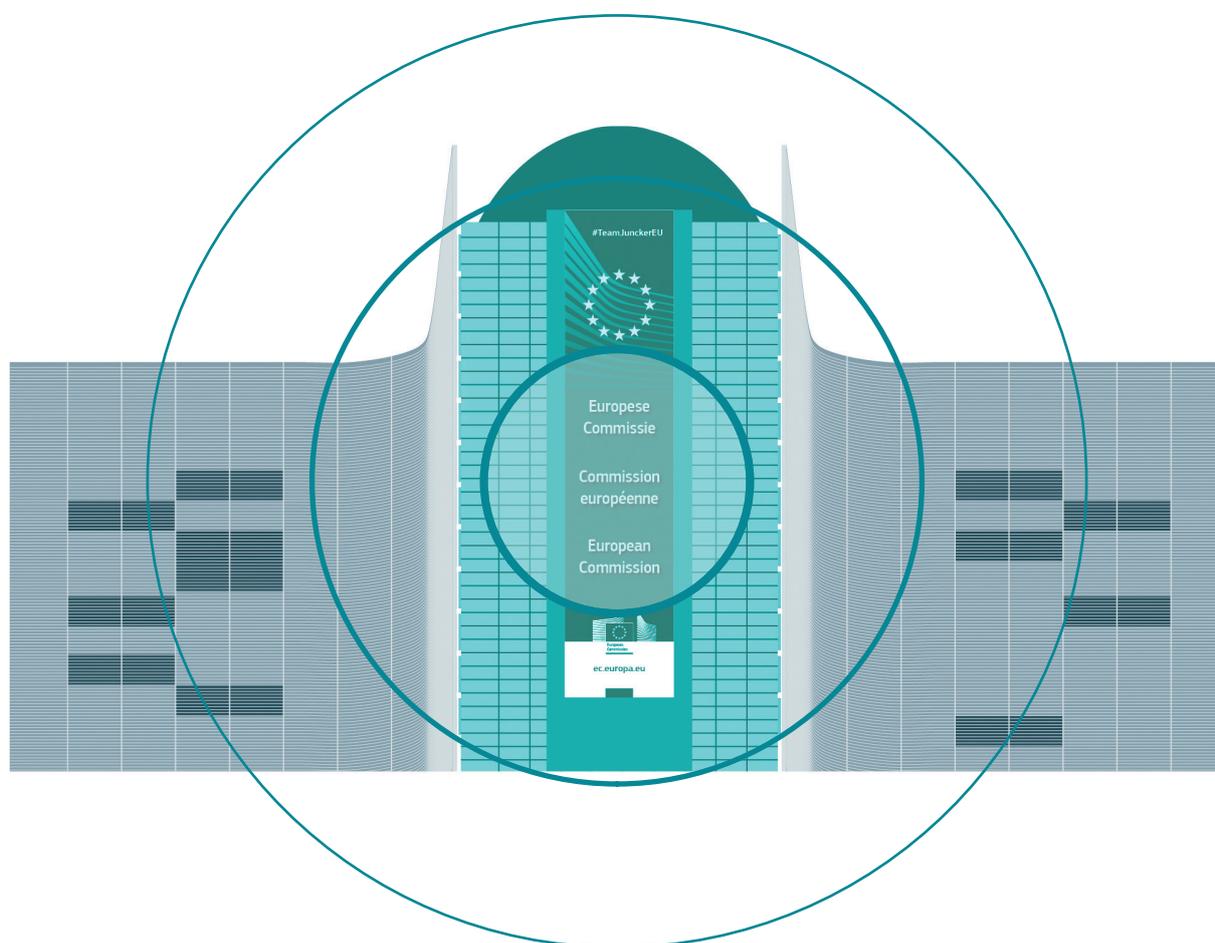
- It must demonstrate its **added value** by providing knowledge or services which no other source is so well placed to provide.
- It must be a **strategic partner** which is close to the political heart of the Commission. Rather than acting as some kind of 'consultant', responding to *ad hoc* requests from individual parts of the Commission, its focus should be on the real political priorities, which will often mean working with many different parts of the Commission at the same time.
- It must therefore be able to work across policy silos, which means that its own structure must become more **integrated**. There must be '**one DG JRC**', with an integrated management structure, and all parts of the organisation working seamlessly together.
- It must become **leaner** and more efficient. Like all parts of the Commission, it has to do more with less. It has to use its resources in a smarter way.
- It must be **people centred**. It must attract the best professionals and provide them with a stimulating environment to work in.

Finally, recent EU politics have been dominated by crisis management (financial crisis and subsequent Greek crisis, refugee crisis, security crisis). While complexity and uncertainty are growing and a lot of developments cannot be predicted as such, a **stronger anticipation culture** would strengthen EU preparedness and resilience. DG JRC can make a significant contribution to this. It already has many of the necessary capacities and tools. It needs to develop them further.

These are all very significant challenges for DG JRC. While some important measures have been implemented over recent years, more is needed. That is the purpose of this new

comprehensive Strategy, which draws on an ex-post evaluation of DG JRC's work over a seven year period (2007-2013)¹.

ONE DG JRC



at the core of the
European Commission

¹ Ex-post evaluation of the direct actions of the Joint Research Centre under the Seventh Framework Programmes 2007-2013.

2 Between two changing worlds: new opportunities, new challenges

DG JRC is a unique organisation. Established under the Euratom Treaty, around 25% of its work continues to be in the nuclear field. Although this share is unlikely to increase, these activities will continue to be of central importance for decades to come. Attitudes to nuclear power vary across the Member States but it is vital, at the very least, to maintain the safe and secure operation of existing and new plants and, where operation ceases, to undertake their safe decommissioning. The application of safeguard measures will continue to be a high priority, as will the fight against illicit trafficking of nuclear and radioactive materials and radiological protection. Maintaining nuclear competences in Europe is therefore essential. DG JRC is playing its part in this. Its nuclear activities complement those of Member States.

However, today, three quarters of DG JRC's work is in other fields. DG JRC works across many different policy fields, from regional development to agriculture, environment and energy. It contributes to the impact assessments prepared for legislative proposals, particularly through its economic analysis and modelling. It carries out pre-normative research and develops standards, harmonised methodologies, reference measurements and materials, which are critical for innovation and the internal market, as well as environmental protection and consumer protection. All of this is essential for the uniform implementation of EU legislation especially for establishing regulatory limits.

While DG JRC's nuclear and non-nuclear activities are distinct from one another in certain

respects, they should not be viewed as entirely separate. Indeed, they benefit one another. There can be knowledge transfers between them in many areas, such as security and emergency preparedness.

Overall, just less than **30% of DG JRC's effort in terms of human resources is devoted to the preparation of EU policies and just over 70% to their implementation. This is the right balance; it will be kept more or less stable.** DG JRC is, and will remain, deeply involved in ensuring the effective and efficient implementation of the 'acquis'. This gives it unique insights into whether or not items of legislation are working well in practice. It will feed these insights into REFIT evaluations.

DG JRC can best be described as a 'boundary sitting at the intersection of the scientific and policy spheres'. This poses very specific challenges. Indeed, the science/policy interface should perhaps be seen as a specific field or discipline in itself, requiring a particular set of methodologies and skills. DG JRC must promote the emergence of this new field and become its leading practitioner.

Moreover, the worlds of both science and policy are now changing very quickly. Policy makers everywhere face an astonishing pace of change and increasingly complex societal challenges. These so called 'wicked' problems² cannot be solved through conventional, linear approaches.

DG JRC must therefore adopt multidisciplinary approaches, which have multiple starting points, and are based on multiple perspectives.

² 'Wicked problems' are different to ordinary problems in that they are hard to define. They involve a very large number of people and different opinions. They are highly inter-twined with other problems, yet have no common root with them. They are characterised by contradictory or changing requirements. Efforts to solve one aspect of them may reveal or create other problems. They are unique and without precedent and do not have definite or definitive solutions.

It must also support other DGs wishing to use new approaches to policy making, for example, drawing on behavioural sciences or co-developing policies with those most directly involved in the issue (citizens, businesses, government administrations).

At the same time, we are witnessing a transformation in the way science is organised and research performed. Often called ‘Science 2.0’, it can be summarised as follows:

More people

In the past, scientific production was limited to a small number of research organisations located in certain parts of Europe and North America. Now, there are centres of excellence in many parts of the world. The number of scientists has increased enormously. Nor is it limited to scientists themselves; we are seeing the rise of ‘citizen scientists’.

More data

New technologies are generating huge quantities of new data. The availability of ‘big data’, coupled with new data analytics, is stimulating scientific discovery.

Moreover, it is not just a matter of scientific data. There is a deluge of highly diverse digitised information. The Internet of Things will vastly increase the amount of data available for analysis. All these data could potentially be used to underpin policy making.

More sharing and collaborating

New technologies mean that scientists across the world can collaborate more easily in a particular field or work together to tackle a complex problem. There is a global shift towards open access to research publications and data.

This massive ‘opening up’ across the research cycle is a huge opportunity. Indeed, without it, we would have very little chance of solving

the big societal challenges. However, it also creates challenges. Both scientists and policy makers are faced with a problem they have never had before: a super-abundance, rather than scarcity, of data, information and knowledge, not all of it high quality.

Indeed, there are concerns that science is not working as it should. According to some estimates, a growing percentage of the experiments or analyses behind articles published in journals cannot be replicated, suggesting that their conclusions may be false. There are fears that scientists receiving funding from interest groups may be biased. There is a risk that public trust in science may be undermined.

This Strategy tackles head on the challenges set out in this and the previous chapter. It is proactive, not reactive. It takes a long-term perspective, covering the period up to 2030.

It was arrived at through a process which was both ‘top down’, i.e. animated by senior management, and ‘bottom up’, i.e. drawing on the insights and contributions of all staff.

It assumes that: the level of DG JRC’s income remains the same; it maintains the same number of sites as at present; and it maintains a level of staff commensurate with the evolution of staff in the Commission.

It is structured as follows:

- **Building the foundations**

This sets out the three basic building blocks of the Strategy, i.e. our new vision, our mission statement and our values. Unless these are firmly in place, the rest of the Strategy cannot take shape.

- **Ensuring added value**

This explains DG JRC’s ‘intervention logic.’ In other words, it sets out the underlying logic which will determine where DG JRC will contribute and where it will not.

- **Balancing activities and breaking silos**

This sets out the thematic focus of the Strategy, allowing DG JRC to focus its activities, while also developing capacities across range of areas, so that it can respond to evolving political priorities. While it inevitably slices up reality, as any thematic focus does, it nevertheless tries to avoid entrenching silos.

- **Managing knowledge and competences**

This shows how DG JRC will make its work more impact-oriented. It also sets out a more strategic approach to DG JRC's partnerships with external organisations and its education and training activities.

- **Making change happen**

This explains how DG JRC will help policy makers to cope with the data, information and knowledge 'overload' and how it will make more widely available its expertise in the use of modern, analytical tools.

- **A stronger anticipation culture**

This looks at how DG JRC can contribute to strengthening the Commission's anticipatory capacity, e.g. through foresight processes and horizon scanning.

- **Redefining excellence**

This looks at how DG JRC can develop a definition of scientific excellence against which to evaluate itself.

- **A people-centred organisation**

This looks at how DG JRC can be made an even better place to work and how its staff can be equipped with the skills and competences which are needed to implement the strategy.

- **Infrastructures fit for purpose**

This sets out how DG JRC will develop state-of-the-art research and ICT infrastructures to support the Strategy.

- **A budget serving the strategy**

This shows how DG JRC's annual budget will underpin the Strategy.

- **Strategic communications**

This looks at how strategic communications can be used to support the Strategy and its implementation.

- **The next steps**

This sets out how the Strategy will be implemented and how progress in its implementation will be monitored.

3 Building the foundations

Any successful strategy, or indeed organisation, depends on strong foundations. DG JRC needs a new, unifying vision statement which sets out, very succinctly, where the organisation is going, its aspirations and primary objectives. Everything DG JRC staff do going forward should ultimately contribute to these objectives. The vision will put everyone ‘on the same page’ so they can all be more productive. It is the anchor point of the Strategy.

DG JRC also needs an updated mission statement, which explains, again very succinctly, the basic purpose of the organisation: why it exists, what it does.

However, most fundamental of all, are DG JRC’s values. It is from these that both the vision and mission spring. Unsurprisingly, since it is a scientific service, DG JRC’s central value is integrity but there are four others which must cut across all areas of its activities.

These three basic building blocks – vision, mission and values - are set out below:

The Vision

This emerged from a careful consideration by senior management of the strategic issues facing DG JRC. It states that DG JRC should aim:

“To play a central role in creating, managing and making sense of collective scientific knowledge for better EU policies.”

This wording makes it clear that DG JRC will continue to create new scientific knowledge by carrying out research work itself. This will remain its core function.

The vision also states that DG JRC will complement its research work by ‘managing’ knowledge from other sources. This means, inter alia, collating and analysing it, and communi-

cating it to policy makers, in a systematic and digestible manner, from a source they trust.

This is a very important support for policy makers, given the enormous quantity of scientific data, information and knowledge they now have to cope with.

These data, information and knowledge are diverse and fragmented. Some of it is contradictory, some of it has not been quality checked, and some of it has been published by organisations for their own specific purposes.

That is why the new vision refers to ‘making sense’ of it. This means that DG JRC will assess it and turn the relevant, good quality parts into meaningful, non-biased and framed evidence for policy.

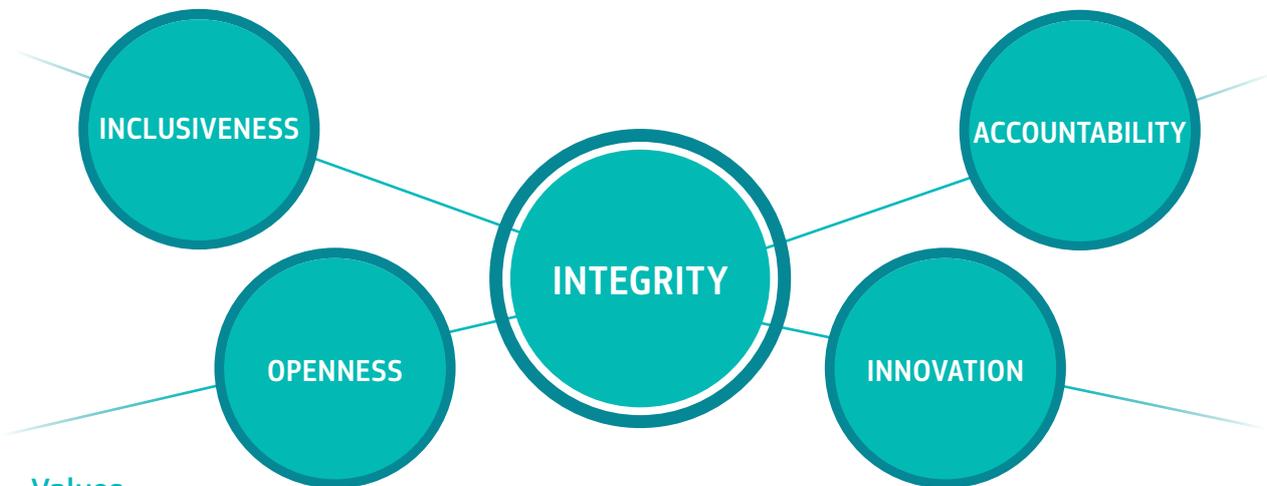
DG JRC acknowledges that most of this scientific knowledge is produced elsewhere, including by well-established organisations and by new and emerging actors in the field. All of these actors can contribute to the evidence presented for policy. That is why the vision refers to ‘collective scientific evidence’.

The Mission Statement

This is aimed as much at the outside world (DG JRC’s partners inside and outside the Commission) as at DG JRC staff.

It has been updated and refocused to reflect the evolution of DG JRC. It now reads as follows:

“As the science and knowledge service of the Commission, our mission is to support EU policies with independent evidence throughout the whole policy cycle.”



Values

DG JRC's approach to integrity and ethics is determined by its unique and multi-faceted role.

Like all Directorates-General, it respects the Commission's fundamental ethical principles. However, DG JRC is different to any other part of the Commission in that it is also a scientific organisation. It must therefore ensure the scientific integrity of its work.

This is more critical than ever, given the growing doubts around this issue in Europe and elsewhere.

That is why DG JRC has drawn up its own 'Statement on Scientific Integrity' setting out the responsibilities of its scientific staff members.

The problem of 'false' or 'bad' science arises, in part, because scientists' success is often measured in terms of their number of publications. The obligation to 'publish or perish' rules academic life. Researchers' funding and careers depend on it.

Some argue that this pressure can lead researchers to exaggerate or cherry pick results in order to get published.

The 'statement on scientific integrity', therefore emphasises transparency, which is the best safeguard against bad practice.

It states, for example, that DG JRC scientists are clear about their assumptions and keep accurate records of all research. They share data and findings openly and promptly to allow verification and replication of their work.

The statement also deals with the issue of independence and impartiality. While it is independent of Member States, industry and other interest groups, DG JRC is part of the Commission, so cannot claim to be independent of it. Indeed, that is why science advice, which is independent of the Commission, can play a useful, complementary role.³

However, while DG JRC staff work in close partnership with colleagues in the Commission, they do not take instructions from them regarding the scientific methods they use or the presentation of results.

The full text of the statement can be found in Annex 1. All science, research and innovation activities of DG JRC are also conducted in full respect of the fundamental ethical principles laid down in the EU Research Framework Programmes (Horizon 2020 and its successors).

³ Commission Decision on the setting up of the High Level Group of Scientific Advisors.

Another unique feature of DG JRC, as compared to other DGs, is that, since 1989, it has been allowed to render services against payment. Income generation is not the primary goal of doing this. Rather, it is to maximise the returns on public investment.

So, for example, infrastructure built using money from the EU budget can be opened up to other European research organisations or to businesses, including SMEs, thus generating further social or economic returns on that public investment.

When it comes to third party work, there may potentially be conflicts of interest for DG JRC. For example, if it compromises the objectivity of its work by favouring, or appearing to favour, third parties with whom it has a contract.

DG JRC has put in place mechanisms to recognise corporate conflict of interest situations. They should be managed in line with DG JRC's Corporate Integrity Statement for Work against Payment.

Finally, the fourth specificity of DG JRC is that it can legally participate in the EU Research Framework Programmes (currently Horizon 2020), while also being a Directorate General of the Commission. To avoid a conflict of interest, this must again be done in full respect of ethical principles. DG JRC will only participate in those actions where there is a clear justification (for example, the need to develop or maintain strategic partnerships or build or share core competences) and where there is a link to DG JRC's priorities.

While, as a scientific organisation, DG JRC prioritises integrity and ethics, there are four other values which all of its staff, both

scientific and non-scientific, must apply across all areas of DG JRC's work. They are:

- **Accountability**

We deliver on our commitments, we take responsibility for the outcomes and we provide thoughtful strategic follow-up. We are accountable to ourselves, our colleagues, to the Commission, and ultimately to Europe's citizens, as represented by the Member States and the European Parliament.

- **Openness**

We are committed to a culture of teamwork and collaboration with internal and external partners alike. We value and promote openness of data, information and knowledge.

- **Inclusiveness**

We respect people. We are committed to fairness and equality of opportunity and we value all individuals for their diverse backgrounds, experiences, styles, approaches and ideas.

- **Innovation**

We study, embrace and promote a spirit of innovation. It is crucial to the continuing success of our organisation in generating maximum value from its results.

It is vital that all staff understand and retain the organisation's values. To make this simpler, they have been summarised in the following sentences:

"We are open and honest, innovative and accountable and treat everyone with respect. We offer opportunities for our staff to realise their potential."



4 Ensuring added value

With the stronger emphasis on evidence-informed policy making, the demand for DG JRC's services is set to grow, while its resources will not. It must become even more efficient. It must also become more selective about what it does. This will clarify the organisation's remit, give it a clearer identity and make it easier for its potential partners to 'read' or understand.

Put simply, DG JRC should only take on work where it can add value. In other words, it should only intervene when it is the only organisation which can do the job, it can do it better than others or it is best placed to do it, due to its unique position as a European level organisation independent of national or private interests.

To this end, it will apply the following logic when deciding what it does, for whom, how and with whom:

What

80% of DG JRC's projects will be co-designed, in the spirit of partnership, with policy DGs and/or EU Member States, in the case of activities under Euratom.

These projects should be genuinely collaborative. The relationship between DG JRC and the policy DGs should not be a formal, arms-length one. DG JRC should not simply hand over its research at the beginning of the policy making process and then have no further involvement.

Rather, it should be an iterative relationship, as is already the case with many DGs. Questions and answers should be generated through co-creation by both DG JRC scientists and their colleagues in policy DGs. In other words, DG JRC will not take instructions from policy DGs, but will rather be an equal partner,

working closely with them, while maintaining its scientific independence.

These projects will focus on laboratory (experimental) and/or desk-based research. In many cases, they will contribute to the development of standards or the harmonisation of methods and measurements.

They will have a knowledge management dimension in that they will take account of all existing relevant knowledge and the knowledge they produce will be managed according to professional standards.

15% of DG JRC's projects will aim to provide underpinning knowledge.

These projects will usually centre on new emerging areas which DG JRC believes are likely to be important in the future.

For example, it might relate to an emerging technology, where DG JRC sees the need to develop new definitions or measurements, which can later be used in regulations relating to that technology.

The remaining 5% of DG JRC's projects will be exploratory research.

While these should have some link to EU policy, there are no pre-defined themes. It is a 'bottom up process', where DG JRC scientists are invited to propose ideas for projects and the best ones are selected. It is an opportunity for them to consider possible futures and to engage in blue sky thinking which may challenge accepted paradigms.

For whom

While every co-designed project will have a 'lead DG', other DGs with an interest in the file should also be closely involved. This will ensure that the different policy perspectives are taken into account to better build consensus inside the Commission.

Work to support of Member States, enlargement countries or international organisations can be justified, if there is a relevant legal/policy framework, as is the case for example for nuclear R&D and training under Euratom, and/or a request from the lead policy DG. Similarly, work to support EU Agencies should be requested via the relevant DG.

How

Where work is co-designed, to ensure the spirit of partnership, there will, from now on, always be an element of DG JRC institutional funding, and, whenever possible, funding from the lead DG.

Work to develop underpinning knowledge or exploratory research can be carried out on a contractual basis (including indirect actions financed through the EU Research Framework Programme) or using institutional funding.

With whom

Partnership with the best organisations is crucial to the successful fulfilment of DG JRC's mission. All DG JRC activities should therefore work in partnership with the key organisations in their fields worldwide. However, irrespective of whom it is working with, DG JRC work should support EU policies.

What DG JRC will not do

DG JRC will support policy DGs in the design and setting up of new systems and processes. However, once they are operational, they should be handed over to another entity or entities, e.g. an external contractor or Member States' agencies, which can be responsible for their long term operation. DG JRC can continue in a supportive role, for example, by monitoring the work to ensure that it is done uniformly and correctly, but it will not be responsible for routine, operational work on a long term basis. Existing activities of this kind will be progressively phased out, with some exceptions, e.g. databases containing confidential information, or sensitive issues which cannot be entrusted to an external contractor.



5 Balancing activities and breaking silos

DG JRC must ensure that its output is fully rounded and reflects all of the EU's overarching objectives. It has therefore decided to base its work around three broad dimensions: **competitiveness** and **fairness**, which reflect the EU's long standing aim to create a prosperous social market economy; and **resilience**, the importance of which has become clear since the financial and economic crisis.

Those creating new projects will be asked to consider how they contribute to these three dimensions. This will be a useful discipline. For example, fairness may not initially seem to be relevant to a particular project but, on reflection, it may be possible to include it.

DG JRC's human resources are currently skewed towards resilience (52%), to a slightly lesser extent competitiveness (40%), while fairness (at 8%) is very much under-served. There will be a progressive shifting of resources to achieve a more even balance between the three dimensions over time.

Scientific knowledge and expertise, human resources and infrastructure all take time to accumulate. DG JRC has to therefore reinforce its long-term planning. At the same time, it must be able to respond to changing political priorities, as well as economic, social and technological developments. It therefore needs to build up its capabilities across different areas. Yet, it also needs to be more streamlined to avoid fragmentation of resources.

To square this circle, as well as the three dimensions, there will be ten 'priority nexus'. These were proposed by senior management and further developed by the staff via a participatory process. They will provide a flexible, rational basis for decisions on human resources and infrastructure.

All ten nexus are set out below, together with a flavour of the themes they may cover. The list is far from exhaustive or definitive. It will be developed more fully, based on a consultation of policy DGs, and a final decision by the Secretariat General.

The percentage of human resources currently devoted to each one is also cited (at the end of each paragraph *in italics*):

1. Economy, finance and markets

DG JRC will be closely involved in the drive to create a strong and resilient Economic and Monetary Union. It will continue to support regulation to ensure that financial markets are stable and at the service of the real economy. It will assist in the development of policies for modern manufacturing. It will underpin efforts to strengthen and deepen the Single Market, paying particular attention to the collaborative economy and new business models. It will examine issues around equity, inequality and fairness. It will assess the impacts of different taxation policies, including their distributional impacts. It will develop indicators going beyond GDP. It will assess the impact of trade agreements on both the EU and developing countries. It will assess the resilience of global value chains and the EU's vulnerability to external shocks.

Currently 12% of human resources

2. Energy and transport

The focus here will be on facilitating the development and deployment of alternative energy sources, including renewables, and on energy transmission, distribution and storage systems. This nexus will cover all aspects of energy efficiency, including user behaviour and the safety of new energy saving technologies and devices. It will analyse the functioning

of the EU and global energy markets. A large part of DG JRC's work continues to focus on the safety, security, safeguard and non-proliferation of current and new generation nuclear reactors and fuel cycles. In transport, it will focus on multi-modal systems and de-carbonisation.

Currently 25% of human resources

3. Education, skills and employment

This nexus will look at how to achieve equitable access to education and training, which is a prerequisite for a fairer society. It will analyse the impact of e-learning and other new forms of education. It will consider how teaching must change to meet the new needs, expectations and learning styles of the internet generation. It will support efforts to forecast future skills needs so they can be matched with skills training. It will analyse the opportunities of the 'on demand' or 'gig' economy and its implications for social protection systems. It will focus too on youth and long term unemployment and issues affecting socially marginalised groups.

Currently 2% of human resources

4. Food, nutrition and health

This nexus will cover different aspects of the food value chain, including food waste, packaging waste and re-cycling and sustainable materials for the production of food packaging. It will deal with food and feed safety and quality. It will examine the implications of new technologies, such as genomics, synthetic biology or nutraceuticals. It will look at different aspects of nutrition and health, including obesity and the fact that foods affect people differently. It will contribute to the design of public health systems and e-health. Areas of health policy where it could make a contribution include: improved prevention; new medicines, including personalised medicine and new technologies such as gene/cell therapies; regenerative medicine and bio-printing.

This nexus will also focus on issues relating to consumer protection and choice.

Currently 15% of human resources

5. Resource scarcity, climate change and sustainability

DG JRC will focus on mitigation of and adaptation to climate change. It will also focus on resource scarcity (land/soil, water, food, biodiversity, critical raw materials). It will help to build a working circular economy as part of the solution to resource scarcity. It will look at alternatives to scarce resources and new sources of resources (e.g. oceans). It will support the development of a sustainable bio-economy in Europe. It will work on air, water and soil quality.

Currently 19% of human resources

6. People, governance in multicultural and networked societies

Across the EU, large swathes of voters have lost faith in the conventional political system. This is fuelling support for insurgent, and often populist, parties and actors. One part of the solution may be democratic re-design and institutional innovation. New technologies offer real possibilities for citizens to play a meaningful role in the governing process. Governments in many countries are experimenting with new forms of participatory democracy, such as citizens' juries or community assemblies. DG JRC will study the effectiveness of these innovations.

Currently 0% of human resource

7. Civil security

This nexus will cover emergency preparedness and response and disaster risk management in cases of natural and man-made hazards, including pandemics and epidemics and chemical, biological, radiological and nuclear (CBRN) threats. It will cover the fight against

crime and terrorism, including combatting illicit trafficking (of people, drugs or weapons), intensified exchange of security-related information, understanding the roots of radicalisation and protection of critical infrastructure. It will look at data protection and the use of communications data by security and intelligence agencies. It will focus too on cyber security. It also includes certain technical aspects relating to the implementation of Treaties and Conventions on the non-proliferation of nuclear, chemical and biological weapons.

Currently 13% of human resources

8. Migration and territorial development

DG JRC will look at the root causes, likely scale and timing of population flows. It will study the impact of population flows across all dimensions - social, cultural, economic and psychological. It will study the implications of demographic change and rapid urbanisation. It will seek ways of measuring and maximising the impact of regional funding.

Currently 6% of human resources

9. Data and digital transformations

This nexus will look at how maximum value can be extracted from data and the conditions needed to allow this to happen in Europe. It will continue its research on the economics of copyright reform and its potential impact on cultural diversity. It will study the economic role of Internet platforms. Another focus will be emerging transformational technologies, such as autonomous and intelligent systems. DG JRC will also seek ways to close the digital divide and combat digital addictions.

Currently 3% of human resources

10. Innovation systems and processes

The important issues here are the transition to open, digital science (Science 2.0), the need to guarantee research integrity and obstacles

to multi- and inter-disciplinary research. This nexus will also look at open innovation, including citizen-driven innovation, the protection, exploitation and trading of intellectual property rights and the characteristics of successful innovation eco-systems. It will seek new ways of engaging citizens as early as possible in debates about new technologies. It will also develop a capacity in Science and Technology Studies (a discipline which looks at how social, political and cultural values affect scientific research and technological innovation).

Currently 5% of human resources

The key point about the nexus is that they link different areas, for example, 'economy, finance and markets' or 'migration and territorial development'. This is to encourage the cross-silo thinking and multi-disciplinary approaches which are needed to solve today's complex problems.

Some of the nexus, such as 'Energy and transport', are already well covered by DG JRC. 'People, governance in multicultural and networked societies' is entirely new for the organisation. Capacities in this area will have to be built up from scratch. 'Education, skills and employment' and 'data and digital transformations' (at 2% and 3% respectively) are both seriously under-resourced, given their critical importance for the economy and society. There will have to be a shift in resources to allow these nexus to be significantly strengthened.

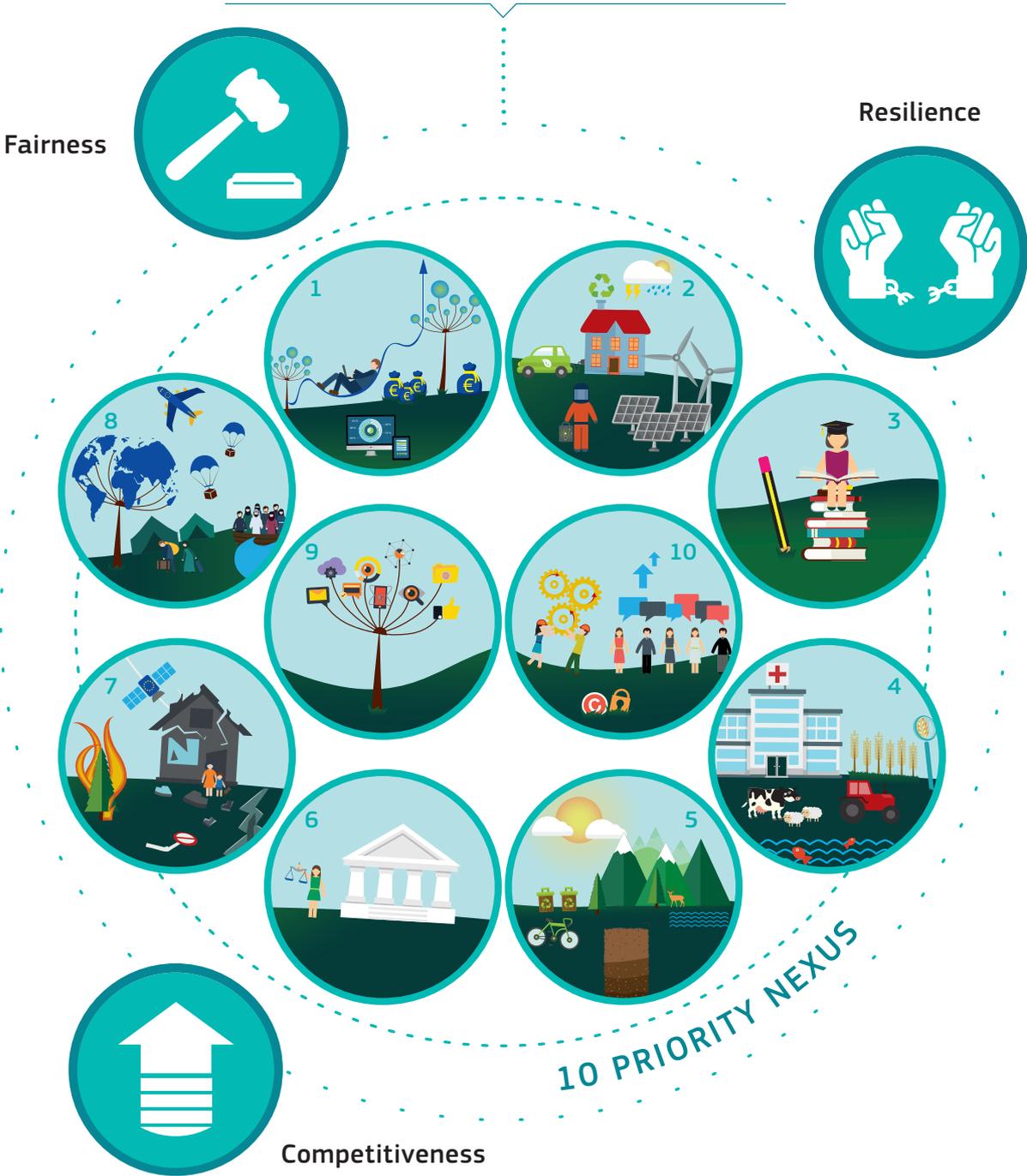
Coverage of the nexus will vary year to year, according to priorities and events. However, the aim, over the lifetime of the Strategy, is to achieve a more balanced coverage than is now the case.

The nexus are not set in stone. They must certainly not be a straitjacket, which prevent DG JRC from tackling new challenges as they emerge. Rather, they will be organic, evolving over time, as priorities change.

Nor can the nexus be allowed to become silos in themselves. There will, of course, be thematic issues, such as the water-food-energy-climate nexus, or geographic issues, such as the Danube Macro-Regional Strategy, which

will cut across them. Trans-nexus projects will therefore be encouraged. These could relate, for example, to the Sustainable Development Goals, which cut across many policy areas.

3 DIMENSIONS
on which to base DG JRC work



6 Making change happen

Ensuring added value and the re-balancing of DG JRC's activities will be achieved through the annual Work Programme. It is the instrument through which the criteria set out in chapter 4 will be applied. It will be used to gradually achieve a more even distribution of resources across the three dimensions and ten priority nexus set out in chapter 5.

The Work Programme is adopted by the College of the Commission, following a formal inter-service consultation of all Commission services. Decisions on the draft Work Programme are taken by senior management. As a basis for these decisions, they will be provided with the information they need to apply the criteria set out in chapter 4, e.g. whether a particular project is co-designed with a number of DGs or how it will be financed and carried out, as well as information regarding the distribution of the proposed projects across the dimensions and priority nexus.

However, to select the right projects, senior management also need an appreciation of their scientific quality, e.g. the methodology to be used, and their likely policy impacts. **Thematic work programme panels** will therefore be created to provide an initial evaluation of projects. These panels will be made up of members of the Scientific Committee and staff from the Directorate responsible for policy coordination.

DG JRC's *raison d'être* is to bring evidence into the policy making process and for that evidence to produce an **impact on EU policy**. It is vital therefore to strengthen the culture of impact evaluation in DG JRC. Assessments will take place on an annual basis, but also a multi-annual basis, since these impacts often take time to materialise. Criteria will be developed for this purpose.

As well as projects, it is very important to take a more strategic approach to **partnerships with external organisations**, which form such a critical part of DG JRC's work.

DG JRC has established a dense network of such partnerships, extending across Member States' public authorities, research organisations, the scientific community, industry, third country institutions and international and regional organisations.

Many of these partnerships have brought great added value to the activities of DG JRC. However, others have not been in line with EU priorities or core DG JRC activities. This is because the network has grown up in an ad hoc, fragmented manner, without a strategic, corporate perspective.

To rectify this, all existing and future partnerships will be assessed to determine whether they fulfil at least some of the following objectives:

- **Reinforcing support to EU policy and political priorities.**
- **Fostering DG JRC's scientific excellence.**
- **Broadening DG JRC's competences in priority nexus.**
- **Helping DG JRC to fulfil its knowledge management function.**
- **Opening its research infrastructure to external scientific use.**

As part of the preparation of each year's Work Programme, there will be a mapping and analysis of partnerships, to identify in which areas, with whom and with which partnership modalities, new partnerships need to be developed. This will allow the development

of a multi-annual roadmap, setting out the agreed areas where new partnerships should be targeted.

All new partnerships will be signed by the Director General. They will be reviewed annually to monitor their progress and evaluate their impact. Indicators will be developed for this purpose. All this will amount to an **integrated strategic partnership framework**.

Finally, **education and training activities** greatly enhance the visibility and prestige of DG JRC. However, they need to be relevant to DG JRC's policy priorities and targeted so that they meet user needs and draw on DG JRC's strengths. DG JRC will therefore enter into a regular, structured dialogue with stakeholders to identify, on the one hand, what their skills deficits and needs are, and on the other, which of these gaps can best be filled by DG JRC.

Training delivered by DG JRC will take three forms: 'on the job' training; online training; and traditional on-site training. Indicators will be developed to measure the results of training activities.

A pilot project of **Collaborative Doctoral Partnerships** will be launched in spring 2016. A Europe-wide call for expression of interest is envisaged, with the aim of establishing partnerships with higher education institutions from Member States and countries associated to the EU Research Framework Programme, on topics proposed by DG JRC and to collaborate (via co-supervision) on specific PhD theses. Those working on these PhDs could spend some time in DG JRC. This will help to prepare them for working at the interface between science and policy. Over time, it will help to create a new type of scientist – those who are equipped to work in the specific field of evidence-informed policy.

7

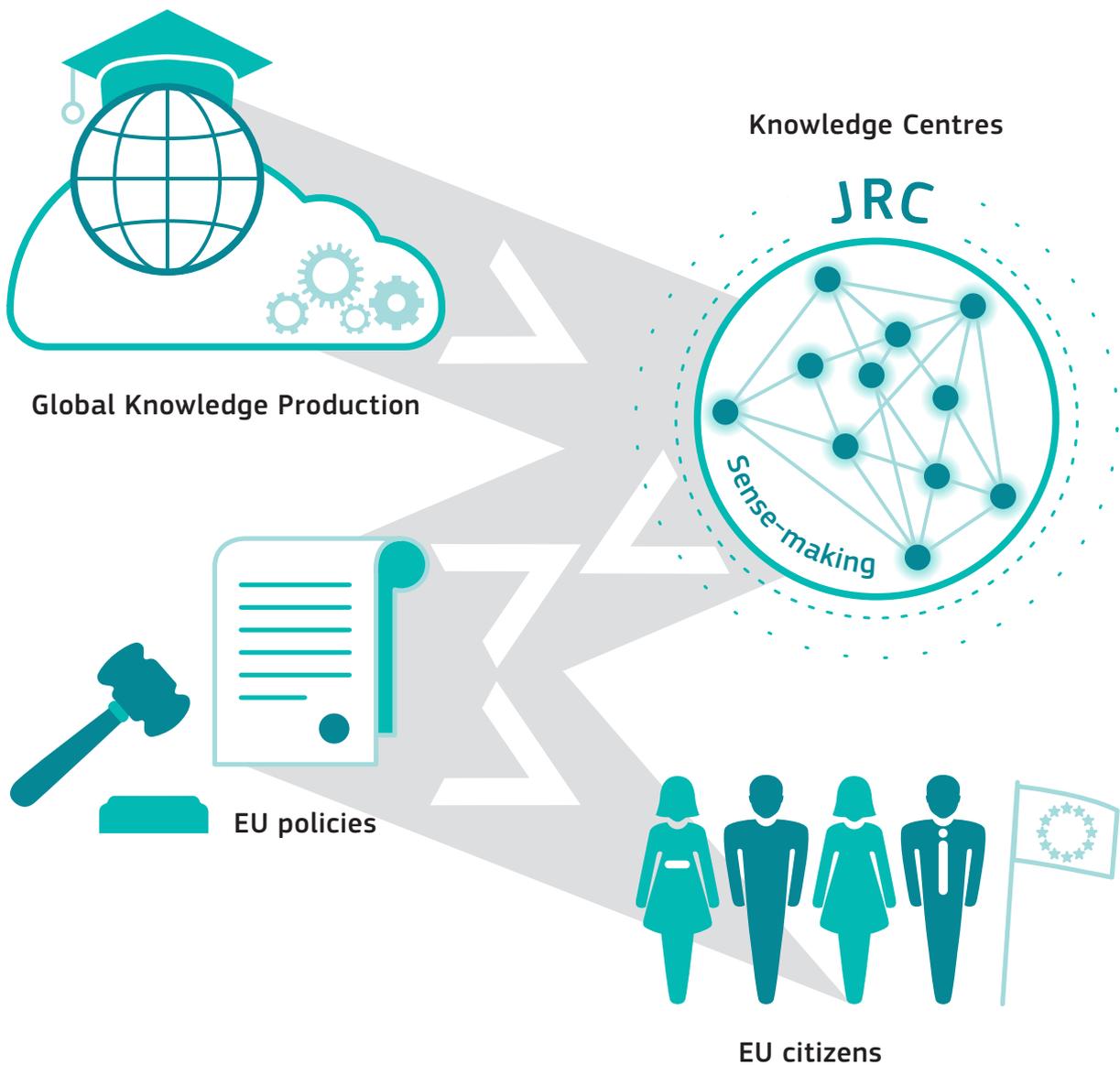
Managing knowledge and competences

Knowledge Centres

In the scientific world, as the flood of knowledge increases, there is a greater need for systematic reviews and meta-analyses. It is often the best scientists who carry out this work.

DG JRC is now moving into this field by creating specific **Knowledge Centres** in certain areas.

These will be virtual entities, bringing together experts and knowledge from different locations inside and outside the Commission. The staff working in them will have core knowledge management skills – systemic reviews, meta-analysis, data visualisation, web design, data analytics, infographics and management of communities of practice.



Their job will be to inform policy makers, in a transparent, tailored, concise and independent manner, about the status and findings of the latest scientific evidence. Where there are legitimate disagreements in the scientific community, these will be clearly presented. The Knowledge Centres will fully acknowledge scientific limits and uncertainties. They will quantify the level of uncertainty associated with the available knowledge to advise policy makers, e.g. on the application of the precautionary principle.

While knowledge is abundant, gaps do, of course, still exist. The Knowledge Centres will be able to map these gaps. They can then be filled by DG JRC, if it is best placed to do so. If this is not the case, the Knowledge Centre should be connected to the best available person or body, so that it 'knows who' as well as 'knows what', which is the essence of knowledge management.

As well as co-ordinating the supply of knowledge — by consolidating knowledge from across the scientific community — the Centres should also seek to co-ordinate the demand for knowledge – by working with several different DGs to coordinate their questions and avoid silos upstream.

Both the relevant policy DGs and the Secretariat General should all be fully implicated in their governance and direction.

The first Knowledge Centre was launched in 2015 and covers Disaster Risk Management. Knowledge Centres on Territorial Policy and on Migration and Demography are under active preparation.

Future Knowledge Centres will be in areas where there is a clear and specific EU policy demand and where DG JRC already has a critical mass of knowledge it can build on.

Competence Centres

As well as Knowledge Centres, which are structured around a policy challenge, DG JRC plans to create **Competence Centres**, centred on analytical tools which can be applied in any policy area. These Centres will bring together, in one place, all the in-house expertise in the use of these tools.

They can offer a number of services. For example, they can advise a policy DG on the choice of the most appropriate tools. They can work with the policy DG to apply the tools to the policy problem in hand. They can provide training courses in the use of the tools for policy making. They can help to benchmark and validate tools used across the Commission, to improve their comparability and robustness.

The first Competence Centre was launched in February 2016 and addresses Composite Indicators. Further Competence Centres on Modelling and on Micro-Economic Impact Evaluation (including counterfactual analysis) are under development. The latter will contribute to REFIT evaluations.

DG JRC must also respond to the growing demand for **country-based knowledge**, in view of the progressive strengthening of the European Semester. It will do this in a number of ways:

First, it will assist the Secretariat General in marshalling country-specific knowledge from across the Commission, through the creation of online platforms, where data, information and knowledge relating to a particular Member State can be shared.

These will, in principle, be open to anyone in the Commission with an interest in the particular Member State, though more restricted spaces will also be created, open only to members of the official 'country teams.'

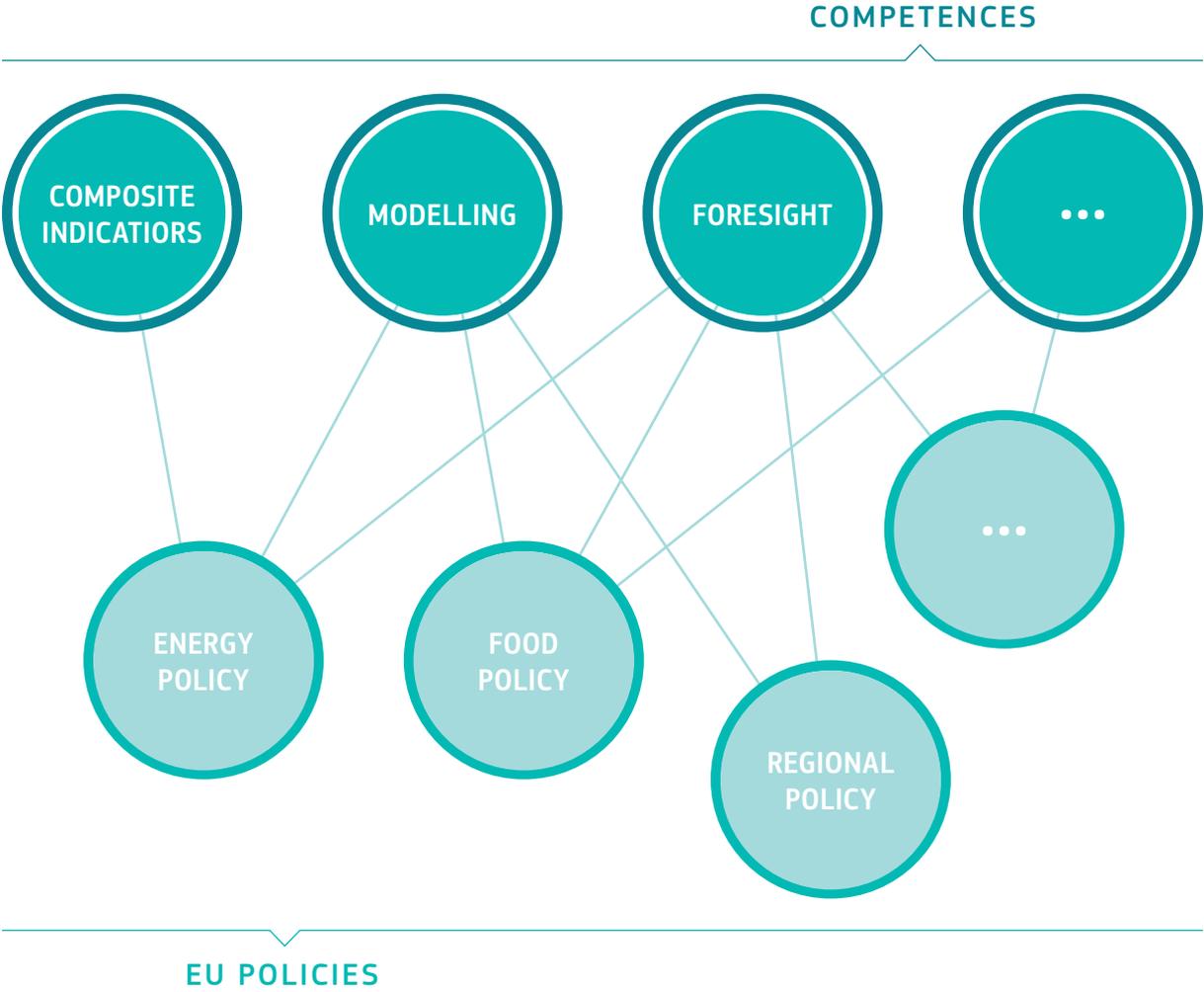
These teams are made up of officials from different policy DGs. They are responsible for preparing the Country Reports and Country-specific Recommendations, which are the most visible results of the Semester process.

From now on, DG JRC will be part of these teams. This will allow it to enter into continuous dialogue with the policy DGs, so as to identify gaps in country knowledge, which it might be able to fill.

Instead of simply working for single DGs, on an individual basis, as it does now, it will be able to work with groups of DGs, who are working together on cross-cutting topics within the teams.

DG JRC will also map all of its existing knowledge and competences, which might be relevant to the Semester, and will make the knowledge available in a dedicated space on its own internal IT collaboration platform.

In time, all of the knowledge that it produces or manages will be tagged in such a way that it can be structured, not just thematically, but also geographically, i.e. at national or at sub-national level.



8 A stronger anticipation culture

There are many reasons why the Commission's anticipatory capacity needs to be strengthened. First, it would enable it to identify its knowledge needs very early on. This would give it time to amass the evidence it needs to launch well prepared policies and proposals in a timely fashion. It would be able to future-proof its impact assessments and its REFIT evaluations. Anticipating social changes and public opinion movements would contribute to shaping public debates and proposing new narratives, instead of being on the defensive.

DG JRC can play a part in this. It has many of the necessary capacities and tools. These include:

- **Horizon scanning**, which strives to identify and make sense of weak and diffuse indications of still hazy emerging trends or paradigm shifts;
- **Technology watch activities**, which could possibly help regulators to anticipate regulatory needs related to the emergence of new technologies or new uses of existing technologies;
- **Foresight processes**, which allow participants to explore different possible futures;
- **Modelling**, which results in quantitative projections, based on scenarios;

- **Multi-dimensional resilience monitoring**, which captures threats and stresses, exposure, vulnerabilities, preparedness, response, adaptation and coping capabilities;

- Finally, it is possible to **'listen' to citizens continuously**, through social media and DG JRC's European Media Monitor, to sense the public mood and public attitudes more accurately.

To build on these capacities, and provide more anticipatory support to the Commission, DG JRC will take action on two fronts:

First, it will embed a culture of anticipation throughout the organisation. All projects will have an anticipatory dimension. They will take account of possible or likely future scientific and technical or other developments which can impact on or be relevant to the matter in hand. Horizon scanning will be part of the job of every DG JRC scientist. It will be an important part of the work of the Knowledge Centres.

Second, DG JRC will continue to develop its expertise in the use of these tools. It will develop, test and evaluate new approaches, e.g. articulating modelling with more qualitative approaches. This will allow it to offer more relevant and impactful services to policy DGs, e.g. developing a range of challenging scenarios against which regulatory frameworks can be 'stress-tested.' Its Competence Centre on Modelling will provide a single point of access to expertise in that domain.

9 Redefining scientific excellence

While this chapter focuses on scientific excellence, DG JRC's success depends on an eco-system of excellence, involving all categories of staff. Excellence is required of all technical scientific support and general support staff. They must cultivate a service orientation, working in a close professional partnership with the scientific staff, translating DG JRC's values into their day to day operational work. In some cases, they are the guardians of the rules, which they must apply flexibly, but without compromising on the essentials.

DG JRC's commitment to excellence is, and must remain, unwavering. It is the key to achieving its vision and mission.

There is a lively debate about what constitutes scientific excellence and how to measure it. Traditionally, scientists have been evaluated according to the number of articles published in scientific journals, the quality of those journals, and the number of times these articles are cited in other articles published in scientific journals.

However, these traditional metrics have disadvantages, not least the perverse effects they can produce by putting researchers under intense pressure to publish, no matter what. There are concerns too that, because many top journals focus on single disciplines, they may militate against multi- or inter-disciplinary research.

Equally, these traditional metrics do not capture new kinds of research outputs, which are increasingly important, like data sets contributed to digital repositories. This means that there is little incentive for researchers to engage in this kind of activity.

Finally, the process of peer review and publication is slow by today's standards. After that, it takes time for citations to appear. So, some

scientists are now sharing their outputs at an earlier stage via social networking sites. Data trawling tools then make it possible to detect and collate a wide range of citations – not those in scholarly journals – but in other sources, such as tweets, blogs, science focused community sites or the media. This gives researchers a quicker and more comprehensive view of the impact of their work.

Excellence is therefore something of a moving target. DG JRC will stay abreast of – and indeed seek to shape – the debate.

For the moment, traditional metrics, against which DG JRC scores relatively well, retain some value, despite their drawbacks. This is because they are based on peer reviewed articles published in scholarly journals. There are well recognised problems with the peer review system but it is currently the only way of ensuring that a piece of work meets the quality standards that the scientific community itself expects. Viable alternatives may emerge in future but there is no other option as yet. Using traditional metrics also guarantees comparability with other research organisations.

Rather than abandoning traditional metrics, therefore, the idea is to complement them to gain a more complete picture of a researcher's productivity.

To capture the full complexity of its role, three pillars are proposed against which DG JRC can measure its scientific excellence: **productivity; scientific recognition; and sharing**, which must be a core DG JRC activity, given its need to work in a multi-disciplinary way with multiple partners.

Each of these pillars can be broken down into a number of criteria. A number of these are suggested in Annex 2. The list is not exhaustive.

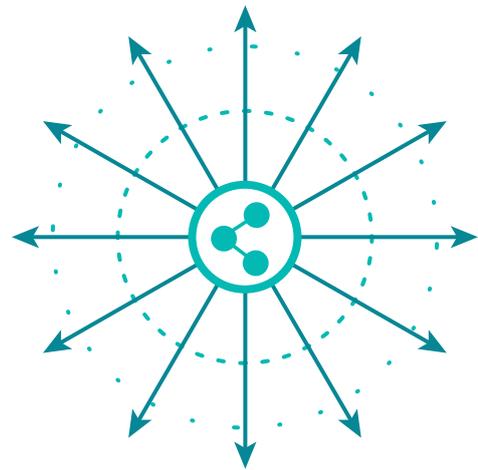
SCIENTIFIC EXCELLENCE



Scientific recognition



Production



Sharing

It will also evolve as the debate around scientific excellence continues.

While they require further development, these criteria can potentially be used as part of the evaluation of units, directorates or DG JRC itself.

They also give an idea of what could be expected from DG JRC staff. All of DG JRC's scientific staff will be subject to a five-yearly evaluation of their scientific output/performance. This exercise will be separate from the usual Career Development Review (CDR). It will focus on the evolution of the staff member's scientific career, e.g. whether they can supervise a PhD thesis.

Scientific excellence must also be promoted within DG JRC. One of the ways to do this will be through the creation of a **Centre for Advanced Studies**. This will be a single space within DG JRC, where top scientists will be able to create research teams, made up of DG JRC scientists, external scientists or both, to study new, multi-disciplinary scientific fields related to policy. It will enable them to engage in cutting edge research, ranging from applied research to topics of a more fundamental nature. It will add more vitality to the scientific life of DG JRC. It will enhance its reputation, attractiveness and brand.

10 A people-centred organisation

The recruitment, development and care of staff are central to the Strategy. This approach is driven by, and underpins, DG JRC's values. Human resource management is also at the core of the Commission's change agenda, with new policies for middle management mobility, talent management and for diversity to be implemented in coming years. DG JRC therefore needs to develop a modern, flexible and people-centric human resources policy, crafted to facilitate the Strategy, whilst fulfilling the new directions being undertaken at the level of the Commission.

In addition, DG JRC embraces and needs diversity, be it based on gender, nationality, skills and competences. It is also an equal opportunities employer. Central to the DG JRC's human resources policy are three dimensions:

Staff evolution

The Strategy is moving DG JRC into new scientific and technical areas, including knowledge management, whilst seeking to strengthen and extend scientific capabilities across the ten priority nexus.

To achieve all this, the proportion of DG JRC staff carrying out scientific and technical work must be maximised. To this end, by 2020, at least 70% of DG JRC's total staff will be involved in the Work Programme (including contractual work) and 30% will be support staff, as compared to the current figure of 39%. Due to the type of work it carries out, and the type of infrastructures it has, particularly in the nuclear field, it is not realistic to reduce the share of support staff any further.

Of the 70% involved in the Work Programme, the proportions of AD equivalent core research staff⁴ and technical support staff will remain the same (80% and 20% respectively).

To help ensure scientific excellence, the proportion of doctorate holders among the core research staff (i.e. around 80%) will also remain the same.

If the Strategy is to be successfully implemented, DG JRC's competence base must be strengthened significantly. By the end of 2016, a tool will be implemented that will continually map competences and identify competence gaps.

A recruitment strategy will be developed to fill these gaps. It will incorporate a continuous monitoring of the recruitment process to ensure as much simplicity and flexibility as possible within the rules of the Commission. The target is to have a recruitment process that takes a maximum of five months from the publication of the position through to the contract offer.

Given DG JRC's unique role, it is vital to recruit people who are able to operate effectively at the science-policy interface. Of course, the degree to which staff interacts with policy makers varies. However, all DG JRC staff must be aware of the need to apply evidence to policy questions. They must understand, or be ready to understand, the needs of policy makers. This should be made clear when vacancies are published.

The ability of DG JRC to address new challenges is also crucial. It will therefore move towards an appropriate mixture of non-permanent and permanent contract types so that it has the necessary flexibility.

Temporary staff also brings new blood to DG JRC. The regular recruitment of Research Fellows (doctorate students, junior researchers, mid-career researchers and senior scientists) greatly enhances the scientific vitality of the

⁴ Scientific AD, contractual agents FGIV, grant holders categories 20, 30 and 40, visiting scientists and detached national experts.

organisation. A programme will be developed, setting out the objectives, priorities and processes, for the recruitment of Research Fellows on short term and long term bases. It will also make it easier to host senior and junior unpaid visiting staff on a short- to mid-term basis.

By 2030 at the latest, DG JRC's staff will be fully gender balanced.

A fair balance of EU Member State nationals will be achieved, in particular for core research staff, especially for Member States where the JRC is currently under-represented⁵.

Leadership

Excellent leadership and management are essential if DG JRC is to achieve its vision. This requires proactive action.

All managers will be required to follow regular leadership development programmes. These will be customised to different target groups, ranging from new managers to experienced managers and senior management. They will include training courses, individual coaching and short term placements in other Commission services.

All managers will undergo a 360 degree feedback by their hierarchy, their peers and their staff, which will form an important element of their development.

Annual staff surveys, as part of the Commission's annual staff surveys, will be the basis for an evidence-driven people management approach, providing feedback on leadership/management impact and style, as well as staff engagement and the overall performance and direction of DG JRC. Staff engagement surveys will also be undertaken regularly.

DG JRC's mission requires managers who have a rounded experience in both science and policy.

They need to have knowledge and experience of policy. In a significant shift, much more priority will be given to recruiting managers who can offer these qualities.

There also needs to be a regular mobility of managers in order to keep the management activity fresh. DG JRC will implement a Head of Unit mobility policy that follows the new Commission policy for enhanced intra-DG and inter-DG mobility. This policy will take into account specific DG JRC needs and constraints in terms of skills and geography. To support the process, DG JRC will draw up competence maps of other DGs' policy areas where DG JRC expertise would add value and vice versa. In any case, no senior or middle manager will keep their position for longer than 10 years. A specific internal policy paper will be adopted on this subject.

In order to develop and retain DG JRC staff, and to prepare them for management roles, a talent management programme will be implemented, including training, as well as mentoring and coaching.

By 2030, at the latest, 50% of positions in all management categories will be occupied by women.

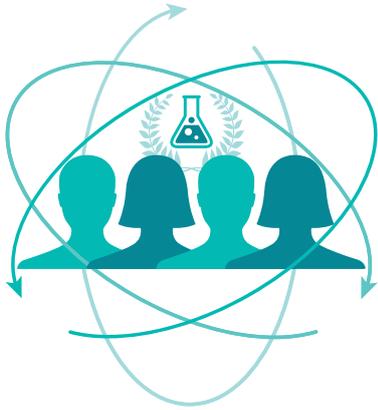
Talent development

The strengthening of DG JRC's competence base will be partly achieved through new recruitment. However, this on its own will not be sufficient. New staff must immediately be offered induction training so that they can fully grasp DG JRC's unique boundary role.

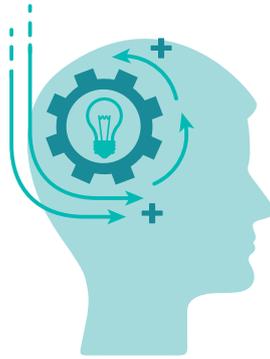
Existing DG JRC staff will also have to develop their skills and competences by means of training and mobility.

⁵ The Netherlands, the UK, the Nordic countries and the Member States of Central and Eastern Europe.

DG JRC'S HUMAN RESOURCES POLICY



Staff evolution



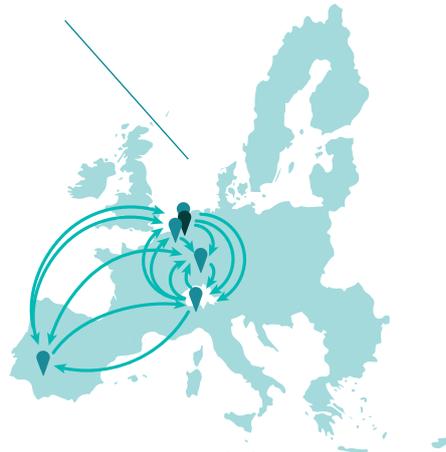
Talent development



Leadership



Training



Mobility

To ensure that DG JRC has a knowledgeable, skilled and flexible staff, a holistic learning and development strategy will be implemented.

Comprehensive individual annual and multi-annual training and development plans will be put in place for all DG JRC staff.

Being recognised for exceptional effort improves staff morale and helps create a better working environment. DG JRC will therefore reinforce its recognition programme. This will range from formal awards for outstanding scientific achievements, through to informal

schemes, such as the recognition of innovative work, which is posted on DG JRC internal IT collaboration platform.

One of the best ways to develop staff experience, skills and competences is to allow them to spend some time working in a different environment. A staff exchange programme will therefore be further developed to allow staff to spend short or long periods working in other parts of DG JRC, relevant Commission Directorates General or other key partner organisations.

11

Infrastructure fit for purpose

DG JRC must have internationally recognised, modern, efficient, safe and secure infrastructure, which creates a positive working environment. It must be environmentally, cost and resource efficient. It must be managed in an efficient, coherent and consolidated manner. DG JRC will therefore develop, for the first time, a single, consolidated, multi-year plan for the development of its infrastructure across all its sites and Directorates.

The plan will serve the objectives of the Strategy. In keeping with the 'one DG JRC' approach, it will be premised on the idea that all infrastructures are at the service of DG JRC as a whole, not simply individual Directorates or units. To ensure that it is implemented properly, there will be a single senior DG JRC manager responsible for all infrastructure activities.

The plan will cover all the different types of DG JRC infrastructure and the links between them. It will be followed up or accompanied by specific actions relating to each one:

General site infrastructure

(Including each site's buildings and associated support infrastructures)

DG JRC will prepare development plans for all its current sites by the end of 2017. These development plans will address the period up to 2030. Until they are completed, no new major infrastructure developments will take place.

The legal requirements of the Member States in which the different DG JRC sites are located will be fully addressed. Senior management site directors will therefore be present at all DG JRC sites, with responsibility for the safety and security of each site. These site directors will be able to call upon locally located, as well as centralised, expertise, as legally required.

Research infrastructure

(Including physical and online research facilities and equipment)

An interactive, web-based inventory of all DG JRC's research infrastructures will be completed, including a log of their location, age, usage, cost and current value, by the end of 2017.

The infrastructures will then be assessed on the basis of financial considerations, demand, uniqueness, use and their relevance to DG JRC's vision and mission. The assessment will take into account the full cost of the equipment, including maintenance and decommissioning costs.

New research infrastructures will only be built after a careful analysis, based on these same criteria. The full public procurement procedures will be applied in all cases. To ensure additional coherence, each proposal for a new research infrastructure over the value of 250 000 euro will also be reviewed by DG JRC's Steering Group on Resources (which is made up of Directors), based on the opinion of DG JRC's Scientific Committee. In the assessment, all components of new research infrastructures and equipment, as well as their proposed use, will be fully taken into account; this will include the full cost, including maintenance and decommissioning.

DG JRC's major research infrastructures, which will be specified in a separate inventory, will be operated according to the European Strategy Forum on Research Infrastructures (ESFRI) criteria. Wherever possible and appropriate, DG JRC maximising infrastructures will be integrated into the ESFRI Roadmap.

Opening up DG JRC's research infrastructure to external use will give European research and business organisations access to equipment

that they would not normally have. It will also raise the value and visibility of DG JRC's research infrastructures.

Access will be granted on the basis of open calls. Different modes of access will be developed to ensure transparency and fairness, and to address different research and industrial requirements.

ICT infrastructure

(Including both administrative and scientific information and communication technologies infrastructure)

DG JRC shall manage more effectively its ICT infrastructure through a new common and coherent ICT vision, strategy and governance. This will be overseen by a DG JRC ICT architect. Its vision 'fit for purpose, cost-efficient, secure, sustainable and well-coordinated ICT Infrastructure' shall allow DG JRC to deliver its mission as a service of the Commission

for science and knowledge. The DG JRC ICT infrastructure shall be based on modern, future-proof principles and standards, aimed at maximising efficiency and productivity, while minimising the burden and rationalising running costs and investments. The underlying ICT architecture shall be developed by mid-2017.

It will take into consideration developments that offer strategic opportunities, including high-speed connectivity and acting as a European big data centre, under the European Cloud and the GÉANT pan-European research network backbone. All ICT expenses will be evaluated by the DG JRC ICT architect. The DG JRC ICT architect will maintain close contact with the Commission services responsible for ICT management. There will be a single senior manager in DG JRC responsible for all operational management issues relating to the ICT infrastructure. All DG JRC staff will have the same access to the DG JRC ICT infrastructure.

12

A budget serving the strategy

The core of DG JRC's institutional funding comes from its participation in the EU Research Framework Programmes (currently Horizon 2020). Beyond this, there are contractual activities, as well as the de-commissioning and waste management programme⁶.

The annual budget will meet and facilitate the requirements of the Strategy; as well as following the principles of sound financial management, i.e. economy, efficiency and effectiveness.

It will do this in two ways:

- As well as being managed efficiently and coherently, DG JRC Researchs infrastructure needs sufficient **investment**. 6% of the total annual budget will therefore be allocated to infrastructure investments, including scientific and technical equipment.

- The **Director General's reserve** will not be lower than 1.5% of the overall budget. This contains appropriations kept at the corporate level. They are allocated to directorates to meet needs not identified at the beginning of the financial year. It will increase flexibility and allow a speedier response to unforeseen challenges.

These changes will be achieved through further reductions in mission costs; continuous efficiency improvements to prevent running costs and other management expenses from increasing beyond 13% of the total budget; and slight reductions in specific credits available to DG JRC projects to the level of 10% of the total budget.

DG JRC's annual allocation of resources must be limited to the yearly available income it receives.



⁶ In accordance with Article 8 of the *Euratom Treaty*.

13 Strategic communications

The Strategy significantly raises the level of ambition for DG JRC. To implement it successfully, it will be necessary to alter the perceptions that different groups, both internal and external, have of DG JRC and the way in which they engage or interact with it. The Strategy must therefore be accompanied by a root and branch reform of DG JRC's approach to communications. This must be a critical part of the roll out of the Strategy.

It will be important to identify the groups which it is most important for DG JRC to influence. These include policy DGs, since the Strategy aims to change DG JRC's relationship with them, but also Vice Presidents, Commissioners and their cabinets, since the goal is to move DG JRC closer to the political heart of the Commission.

Up to now, DG JRC has worked in a 'bottom up' model, with its scientific work being handed to experts in policy DGs and then filtering upwards towards senior decision makers in the form of policy options. This must continue to be its core way of working. However, it will no longer be enough on its own. It will be necessary to communicate directly, at regular intervals, with the top political level. This will require a radically new approach and, indeed, new products.

Collaboration with the best external partners worldwide is essential for DG JRC's work, all the more so now that it is shifting into the area of knowledge management. Communicating with scientists must therefore remain a priority. However, a more targeted approach is needed. Efforts should focus on those scientists who are interested in the field of science for policy.

Finally, as a publicly funded organisation, DG JRC is accountable to EU citizens and it must communicate with them. It must also communicate with business and civil society, both of whom have a clear interest and stake in DG

JRC's work in providing independent evidence for policy.

Messages must be developed which are appropriate and relevant for each of these audiences. Communication must be built around their needs, delivering information to them in the way that they want.

Their attitudes towards DG JRC should be mapped and the effectiveness of different communications interventions should be tracked.

Communication with them will be achieved through an integrated mix of tactics (publications, digital presence, audio-visual and events).

Moreover, DG JRC's communications efforts must keep pace with the unrelenting speed of technological change, which will only quicken. Continuous innovation will be the key to success. For example, DG JRC must develop a more collaborative approach to science and knowledge communication, engaging stakeholders in research results, as well as making them part of the research and knowledge management processes. This could be done through various Web 2.0 communication means, including via science and professional social networking platforms, blogging or opening labs online.

Finally, the ambition to have 'one DG JRC', and to present that to the outside world, implies a corporate approach to communications, consistent branding and a single, strategic planning process for publications.

This will be directed by senior management, with all staff feeding into it. Communication should be a key dimension of every DG JRC project. It should be considered right from the project's inception.

14

The next steps

A series of action plans and other documents will be elaborated and adopted in order to flesh out different parts of the Strategy and to specify exactly how they will be implemented and when.

A Progress Report will be submitted each year to the Commissioner and the Board of Governors charting DG JRC's progress in implementing the Strategy. Quantitative indicators will be developed and used in every area where this is possible and appropriate.

Progress towards targets will be monitored regularly to ensure that DG JRC is on track to meet them by the agreed deadline.

Since this is a long term Strategy, stretching up to 2030, it will be necessary to review it periodically, to ascertain whether it requires some adjustment. The ex post review of Horizon 2020 will provide the first such opportunity, with the mid-term and ex post reviews of its successor providing further opportunities.



Annex

DG JRC Statement on Scientific Integrity

The reputation of DG JRC as the scientific service of the European Commission is built on the quality of its research and on the intellectual rigour with which scientific evidence is prepared and presented. Independence, objectivity and transparency are crucial for the trustworthiness of the DG JRC's research work.

Proper conduct of research requires high standards of integrity based upon principles and professional responsibilities among staff.

Our principles

- Excellence and honesty in our research
- Objectivity in our positions
- Accountability in the conduct of research
- Independence and impartiality in all aspects of our research
- Inclusive and open in working with others

Our responsibilities

• Integrity

We pursue our activities in an honest and transparent manner with the obligation of giving scientific support and trustworthy advice.

• Independence and impartiality

We do not seek or take instructions from EU institutions or any other body regarding our scientific methods and the presentation of results.

• Accountability and transparency

Our scientists are clear about their assumptions and keep accurate records of all research to allow verification and replication of their work.

• Research methods

Our scientists employ appropriate research methods, base conclusions on critical analysis of results, and report findings and interpretations fully and objectively.

• Collaboration

Our scientists share data and findings openly and promptly, taking due account of ownership claims and confidentiality. The Commission adheres to open access.

• Authorship

Our scientists take responsibility for their contributions to all publications, reports and other representations of their research. Lists of authors should include all those, and only those, who meet authorship criteria⁷.

• Publication acknowledgement

Our scientific publications acknowledge the names and roles of those who made significant contributions to the research, but do not meet authorship criteria.

• Peer review

Our scientists provide fair, prompt and rigorous evaluations and respect confidentiality when reviewing the work of others.

• Conflict of interest

We manage conflicts of interest so as not to compromise the trustworthiness of our research.

⁷ Authorship is only ascribed based on a creative and significant contribution to the research (e.g. contribution to the design, data collection, data analysis, or reporting) not for general supervision of a research group or editing of text.

- **Unbiased information**

We act impartially when providing policy makers and decision takers with scientific evidence and information. In identifying and giving advice on policy options we refrain from making unwarranted judgement about any preferences.

- **Communication**

Our scientists limit professional comments to their recognised expertise when engaging in public discussions on research findings.

This statement draws on the *Code of Conduct for Research Integrity of the European Science Foundation (ESF)* and the *Singapore Statement on Research Integrity*.

Annex II

Pillars of Scientific Excellence

Scientific excellence for DG JRC needs to be placed in a broad context. This context can be defined in terms of three pillars:

- Productivity
- Science recognition
- Sharing

Each of these pillars can be broken down into a number of criteria which are set out below:

Productivity

- **Articles in scientific papers**

This is a traditional measure of scientific excellence. Their number and quality go some way to defining the scientific excellence of the authors.

- **Our Books / chapters in books**

The production of a book, or invitations to contribute a chapter to a book, is a good indication of recognised excellence.

Other criteria also need to be taken into account, but do not have the same level of importance for the JRC:

- **Patents and copyright**

- **Standardisation**

The participation in technical committees and groups towards the definition of standards at national, European or international levels.

Scientific recognition

Scientific recognition can take various forms, particularly as science develops beyond its traditional organisational and participation boundaries.

- **Citations in scientific publications**

This is another traditional measure of scientific excellence, captured by various measures such as the 'h-index'.

- **Citations on social media**

Citations on Wikipedia and mentions on other social media (e.g. Twitter) are a means of capturing the wider public recognition of scientific work.

- **Peer reviews on on-line scientific publishing platforms**

The increasing number of scientific publications being published on-line has led to the development of a number of scientific publishing platforms (e.g. 'Faculty of 1000'). Reviews by peers on these platforms are an important source of scientific recognition.

- **Positions within professional organisations and Learned Societies**

What professional memberships (societies, academies...) are held, positions that have been held, and the level of that membership (member, fellow.....)

- **Major international duties**

Any major international scientific duties undertaken.

- **Prizes and awards received**

- **Visiting professorships**

The type and location of visiting professorships can provide indications about the recognition of a scientist.

- **Participation in the scientific review of organisations and programmes**

- **Scientific editor of recognised journals**

- **Organiser of major international scientific events**

- **Peer recognition joint authorship**

Who a scientist writes papers with can provide an indication of their recognition.

- **Number of unpaid excellent visiting scientists**

- **Mainstream media coverage**

Qualitative data illuminates quantitative metrics. The number and type of media coverage is a key example of this.

- **Discussions on research blogs**

Increasing numbers of scientists are producing and reading research blogs. They are a rich source of information concerning current scientific development.

- **On-line reference managers**

Tracking bookmarks, page views and paper downloads made by scientists in on-line reference and scientific paper managers (so called 'usage based metrics') (e.g. Mendeley, Research Gate, Zotero, CiteULike).

Sharing

DG JRC is a necessarily multi-disciplinary organisation working with partners, and actively pursuing education and training. This means that DG JRC has to be a sharing organisation in order to be able to put together the best possible evidence across-Unit, Directorate, site and partners based upon shared of data and knowledge.

Sharing is therefore a core activity of DG JRC. Sharing can be measured via a range of criteria:

- **Successfully receiving Marie Curie fellows**

- **Public outreach activities**

Outreach activities towards the public are a key role of DG JRC. Sharing the DG JRC's knowledge and expertise is a key DG JRC role.

- **Knowledge sharing initiatives**

the innovation and realisation of new ways of sharing knowledge across DG JRC.

- **Short term training**

Undertaking training courses for partner DGs or external organisations.

- **Supervising**

DG JRC trainees and research fellows, as well as mentoring colleagues.

- **Co-authored papers**

Papers co-authored by DG JRC staff members from different Units, Directorates and sites is a key indicator of sharing in DG JRC.

- **Sharing tools**

The overall performance of individual staff will be measured against new sharing tools, such as Research Gate and Mendeley.



JRC Mission

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



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