



European
Commission

Knowledge Management for Policy

Stocktaking of one year
of JRC activities

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CONTACT INFORMATION

Directorate H - Knowledge Management

JRC-DIR-H-SEC@ec.europa.eu

EU Science Hub

<https://ec.europa.eu/jrc>

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Knowledge Management for Policy – Stocktaking of one year of JRC activities

Improving knowledge management and collaborative working is a priority for overcoming silos mentalities and connecting synergies between portfolios, as envisaged in the Commission Communication C(2016)6626.

In its 2030 Strategy, the JRC took up this challenge by 1) introducing a horizontal 'knowledge management' layer in the organigram, to mobilise scientific competences from different Directorates around the Commission's policy goals 2) championing the implementation of new collaboration practices and platforms as well as the development of a knowledge management professionalisation programme; 3) starting to transform itself from a traditional research-producing organisation into a world-leading manager of knowledge for EU policy-making.

One year after the reorganisation carried out on the 1st of July 2016 to align the JRC organigram with the new strategy, this report reviews the progress made and describes the main achievements.

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Executive summary

Effective knowledge management is essential for modernising the way the European Commission operates, overcoming silos mentalities and connecting synergies between portfolios, as envisaged by President Juncker and set out in the 2016 Communication on Data, Information and Knowledge Management¹. The growing complexity of the policy issues at stake and the increasing flood of data and information available require an increasing ability to map, review, analyse and condense best available knowledge in support of EU policies.

The 'Strategy 2030' has set the JRC on the right course to take on these challenges, transforming itself from a traditional research-making organisation into a manager of knowledge for EU policies, capable to assist the Commission in innovating its working methods, processes and tools. In the first year since the reorganisation aligning the JRC organigram with the Strategy, significant steps forward have been made, a few examples of which are described below.

The new Knowledge Management Directorate and the six Knowledge Management Units, reporting hierarchically to the Thematic Directorates, have started drawing together a broad range of knowledge repositories and services, developed and managed either by them or by their Knowledge Production colleagues.

The new Competence Directorate is hosting the EU policy Lab, a collaborative and experimental space with the mission to support innovation into policymaking through experimenting new tools, methods and approaches applied to policy issues and problems by bringing together, and where possible combining, foresight, behavioural insights and design for policy.

At the same time, the JRC Thematic Directorates have continued developing Knowledge Centres in key policy areas. In this innovative approach to evidence-based policy making, policymakers and researchers are brought together to co-create answers to policy questions and align research action with policy needs. Four Knowledge Centres have been created so far, collectively involving 24 DGs and Services; two more are in preparation and will be launched in the near future.

In an analogous way, Competence Centres have been created, centred on analytical tools and working directly with the Commission policy DGs to apply the tools to the policy problems at hand. Some important achievements during the period of reference are the following:

- ▶ the newly launched KC on Territorial Development released a unified Web Portal, including a Urban Data Platform to support the Urban Agenda for the EU;

¹ C(2016) 6626 final

- ▶ the Knowledge Centre on Migration and Demography created a Dynamic Data Hub, providing up-to-date data and analysis of migration flows, trends and impacts;
- ▶ the Knowledge Centre on Disaster Risk Management produced a major State-of-the-art report on ‘Science for disaster risk management 2017: knowing better and losing less’;
- ▶ the Competence Centre on Composite Indicators developed a ‘Social Scoreboard’ to accompany the European Pillar of Social Rights.

Work on data management has been intensified, investing in innovative ways of deriving information and knowledge from the wealth of JRC research data, made available to researchers, information professionals, entrepreneurs and the general public via the JRC Data Catalogue.

Through the development of the Connected platform and its use for the European Semester process, the JRC is promoting collaborative working techniques, tackling head-on the practical, day-to-day obstacles to silo-breaking in the Commission. To promote not only tools but also cultural change, the first steps were taken towards the development of a new profession of knowledge brokers working at the interface between science and policy, through the identification of key skills and the metrics needed to guide this new profession.

The next few years will require still more innovation from the JRC to deal with the challenges that surround the use of scientific knowledge and

experts for policymaking. If it ever really existed, the traditional ‘deficit’ model of science being integrated into the policymaking cycle in a linear and uncontested way is now being challenged by a more politically polarised ‘post-fact’ culture. The JRC is strengthening its emphasis on providing a sound factual base of crucial debates by issuing its ‘flagship reports’ which bring salient points in a visually attractive and easily understandable ways. Examples of this approach are the recently released report on ‘What makes a fair society? Insights and evidence’ and the upcoming one ‘Science for the Africa-EU Partnership - Building evidence for sustainable development’.

The use of science and expertise in policymaking has to be advocated in the face of populist opposition to experts and new ways of communicating science to the general public and engaging with their concerns will need to be developed. Similarly new methods and processes for using science in policymaking will need to be developed that take into account the latest science of cognition and decision-making. Finally, all public knowledge bodies will need to develop rigorous ways of measuring their impact, to keep the pressure to innovate.

In this context, the JRC aims to become a global leader in the creation, management and application of knowledge for public policy, helping to address the concerns raised by the current ‘post-fact’ debate and leading the campaign for evidence-informed policy using the latest methods.



Introduction

Improving knowledge management and collaborative working in the Commission is a priority for President Juncker, who, in the mission letters to all Members of the College in November 2014, called for a modernisation of the Commission, with emphasis on overcoming silos mentalities and connecting synergies between portfolios.

To enable this transformation, the Commission issued in October 2016 a Communication on Data, Information and Knowledge Management, setting out a corporate strategy based on two principles:

- ▶ data, information and knowledge should be shared as widely as possible within the Commission unless restrictions apply;
- ▶ collaborative working practices should be the preferred working method.

In its 2030 Strategy², the JRC took up the knowledge management and modernisation challenges on three different levels:

- ▶ it introduced a horizontal 'knowledge management' layer in the organigram, to help break its own silos and mobilise scientific competences from different Directorates around the Commission's policy goals;

- ▶ it took up a leading role as a promoter of knowledge management inside the Commission, championing the implementation of new collaboration practices and platforms as well as the development of a knowledge management professionalisation programme;

- ▶ as the Commission's science and knowledge service, it has begun to transform itself from traditional research-producing organisation into a world-leading manager of knowledge for EU policies, capable of mapping, gathering, analysing, quality checking and, above all, making sense of the best knowledge available worldwide, wherever produced, in support of EU policies.

To this end, the adoption of the JRC 2030 strategy and the reorganisation carried out on the 1st of July 2016 to align the JRC organigram with it was a strategic leap forward. Approximately one year later, this report reviews the progress made and describes the main achievements.

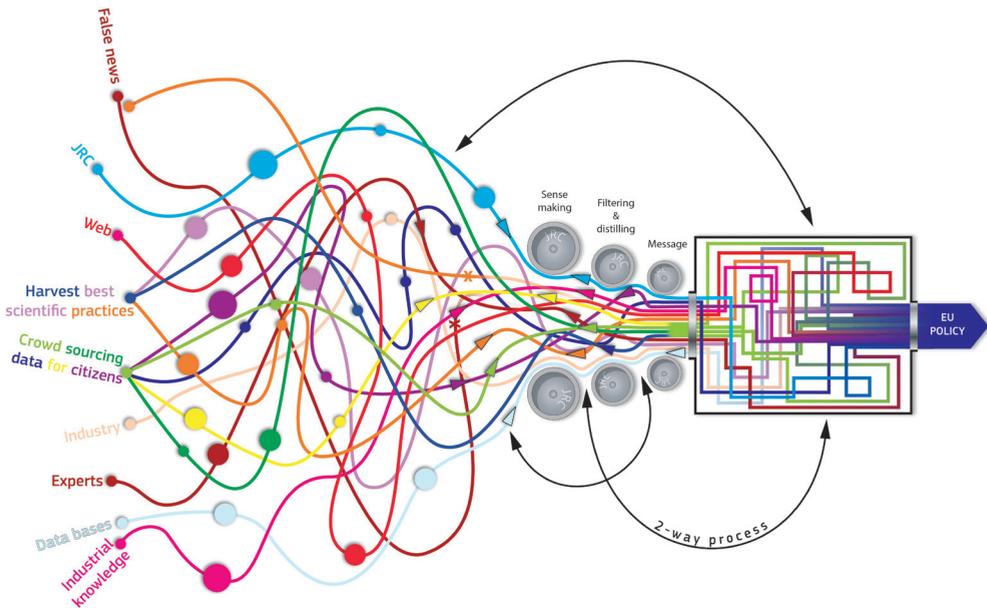
¹ C(2016) 6626 final, Data, Information and Knowledge Management at the European Commission.

² JRC Strategy 2030, available at <https://connected.cnect.cec.eu.int/docs/DOC-85148>

Making sense of Data, Information and Knowledge

The JRC Strategy 2030 outlines the new role of the JRC as a knowledge management organisation, stressing the need to map, collate, analyse,

quality check policy-relevant data, information and knowledge, **making sense** of it to underpin evidence-informed policymaking.



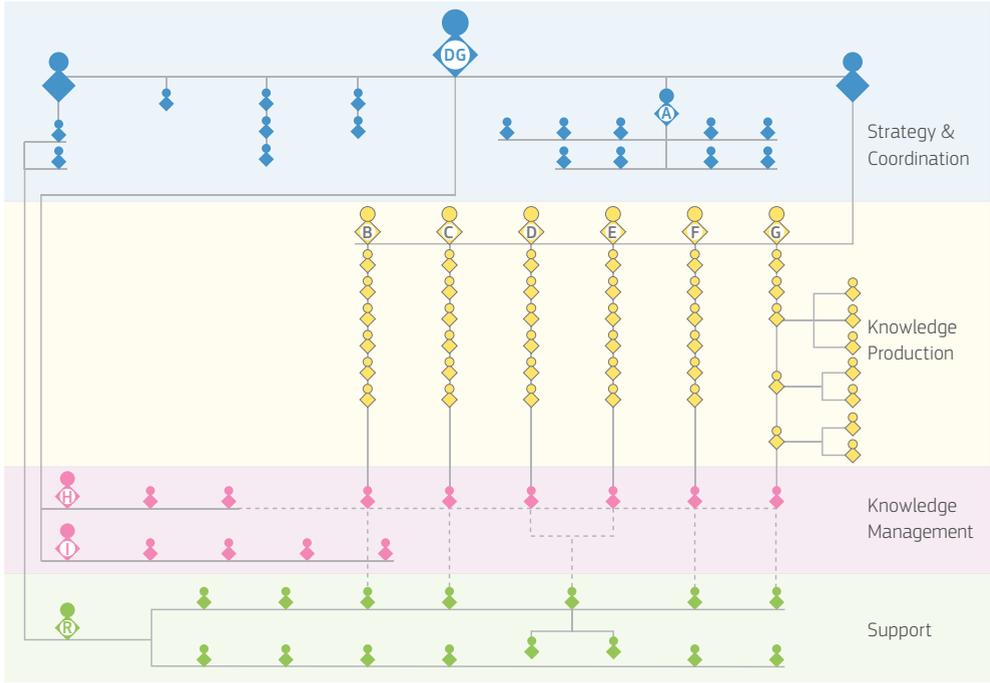
In the information deluge of today, the JRC role in managing knowledge in support of EU policy making can be fundamental.

The reorganisation of JRC introduced a horizontal 'knowledge management' layer in the organigram, consisting of:

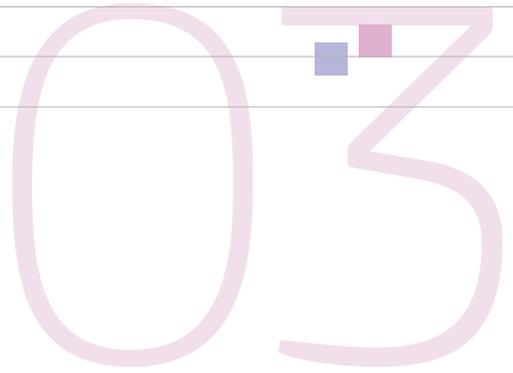
- ▶ A Knowledge Management Directorate, to coordinate related activities across JRC, developing common tools, best practices and platforms to facilitate knowledge management for policy.
- ▶ A Competence Directorate, entrusted to set up and operate Com-

petence Centres which will develop, provide and apply analytical tools, methods and integrated solutions to better support the entire Commission for the conception, implementation and evaluation of EU policies.

- ▶ Six Knowledge Management Units reporting hierarchically to the Knowledge Production Directorates and functionally to the Knowledge Management one, as an interface between them.



Managing Knowledge



3.1 The JRC Knowledge Management Network

The six Knowledge Management Units are key enablers of the JRC role as the European Commission Knowledge Management Service.

Their vision is to be the central point of expertise within the European Commission for state-of-the-art knowledge and robust scientific evidence to support the development and implementation of EU policies in the respective thematic areas. Specific attention is given to anticipating knowledge needs and mapping gaps, suggesting research topics to be carried out in the JRC.

Their special position in the JRC organigram allows them to drive, inspire or support the development and successful management of a variety of JRC knowledge resources, in close collaboration with their Knowledge Production colleagues. This particularly includes observatories and information systems, of which some examples are the following:

- ▶ **The Research Innovation Observatory and Policy Support Facility (RIO-PSF)** project website (39701 webpage views in 2016) is a reference and key source of information in the field of **R&I policy**, serving

particularly DG RTD. It delivers analysis, insights, statistical data and best practices on designing, implementing and evaluating R&I policy at EU and national levels, supporting the European Semester analysis, informing national and regional policy makers and other stakeholders e.g. in academia and in industry. In 2015 it also covered associated countries and selected other countries.

- ▶ **The JRC Bioeconomy Observatory** was implemented in partnership with other EU Research organisation through a FP7 indirect research action, for the purpose of gathering data and information about bioeconomy. The observatory website (38836 views in 2016) includes statistics on investments in research, policy mapping, country profiles, data visualisation and analytical reports, and has acted as an incubator for the **EU Knowledge Centre on Bioeconomy** further described in the next section.

- ▶ **The Digital Observatory for Protected Areas (DOPA)** is a set of web services and applications that can be used primarily to assess, monitor, report on (and increasingly forecast) the **state of, and the pressure on,**

protected areas at multiple scales (local, national and global). The main partner within the Commission is DG ENV. The DOPA can be used, for example, to support spatial planning, resource allocation by park managers and funding agencies, protected area development and management, and national and international reporting. Using global reference datasets, the DOPA supports global assessments, but also provides a broad range of consistent and comparable indicators at country, ecoregion and protected area level. In 2016 the DOPA web pages were viewed 21 429 times.

► **The Strategic Energy Technologies Information System (SETIS)** is an integrated and effective assessment, monitoring and reporting tool of the **European innovation landscape**

in the field of energy, that supports the Energy Union's governance and in particular the implementation of the Integrated Plan on Strategic Energy Technologies (SET-Plan) and the regular reports on the State of the Energy Union. DG ENER and RTD are the main users and partners. SETIS operates a Web platform that serves as a repository of reports, publications and other key documents with information on low-carbon energy technologies, their market and performance, as well as analyses of barriers to their large scale deployment, which are essential for the transition to a low-carbon economy, produced by the JRC and other SET-Plan stakeholders. The SETIS web platform also contains the European R&I Energy Landscape database and attracted 73 845 views in 2016.

Knowledge Management in Action Enabling the Energy Union

The Commission has committed to present annual State of the Energy Union reports that show progress made since the Energy Union Framework Strategy was adopted to bring about the transition to a low-carbon, secure and competitive economy. SETIS is a key contributor to these reports, with an assessment of the evolution of the innovation ecosystem in the field of energy at national and EU level.

The assessment focuses on two pillars:

- Evaluation of public and private investments in energy R&D, in collaboration with national and international authorities, using an innovative methodology developed by the JRC that has now become a Commission reference.
- Innovations (patents) using a procedure developed by the JRC and validated by the European Patent Office.

The SETIS assessments also support the development of country fact sheets by the Commission that form the basis for the formulation of recommendations regarding the implementation of the Research, Innovation and Competitiveness Dimension of the Energy Union in each Member State.

▶ **The Transport Research and Innovation Monitoring and Information System (TRIMIS)** will be launched in September 2017, and will be the Commission's instrument for mapping **technology trends and research and innovation capacities in the transport field**. Like SETIS, it serves primarily DG ENER and DG RTD, and it is designed to fulfil multiple roles: horizon scanning, monitoring progress against R&I roadmaps, mapping and analysing transport technologies, investments and capacities, dissemination of information, provision of toolboxes and models. It will support the EU Strategic Transport Research and Innovation Agenda (STRIA) and its seven roadmaps. In addition, it will map and analyse technology trends and R&I capacities of the transport sector.

▶ The **EU Aid Explorer**, developed by the JRC in collaboration with DG DEVCO and ECHO, provides easy access to clear, complete and accurate data on **development and humanitarian aid** around the world. The EU is collectively the biggest donor in the world, providing help in overcoming poverty and advance global development. It is committed to implementing the international agreements on **aid effectiveness** and to being accountable to EU citizens who make solidarity initiatives possible. EU Aid Explorer is part of fulfilling the various international **transparency** commitments including those for the Sustainable Development Goals, and Sendai Framework. In this web tool, maps and graphs are used to visualise which donor is active where, which sectors and countries receive how much assistance and how funding changes over time.

The JRC is also managing knowledge resources in the **nuclear** field. For example, it is developing a platform for hosting synthesis reports on the topical areas of EURATOM research through a **Nuclear Energy Observatory (NEO)**, used primarily by DG ENER. At present, its main components are:

▶ The **ODIN Portal** (Online Data & Information Network for energy) provides access to engineering and document databases and other information related to European research in the domains of nuclear and conventional energy.

▶ The **Clearinghouse** is a European central repository on operating experience feedback for nuclear power plants, from EU nuclear safety regulatory authorities and their Technical Support Organizations (TSO). In 2017, Ukraine joined on a voluntary basis.

▶ The **STRESA (Storage of Thermal REactor Safety Analysis Data)** is a secure repository of experimental data, intended for disseminating information from largescale scientific projects.

The **European Human Resources Observatory for the Nuclear energy sector (EHRO-N)** received 35 380 visits in 2016. It produces and regularly updates a quality-assured database on human resource needs for the different stakeholders in nuclear energy and nuclear safety. Particularly instrumental for DG ENER, EAC, RTD, EMPL, it helps identifying gaps and deficiencies in the European nuclear education and training (E&T) infrastructure and elaborating recommendations for remedial actions and optimisation. It also plays an

active role in the development of a European scheme of nuclear qualifications and mutual recognition (the European Credit System for Vocational Education and Training/ECVET).

Another intensely used resource is the **EUropean Radiological Data Exchange Platform (EURDEP - 49632 visitors in 2016)**, which is relying on a network of 39 participating countries, collecting input from automatic surveillance systems almost in real time. Together with the **European Atlas of Natural Radiation (EANR)**, a collection of maps of Europe displaying levels of natural radioactivity caused by different sources, it provides **information about the level of environmental radioactivity**, which is of particular interest for DG ENER and ENV.

Finally, the **European Community Urgent Radiological Information Exchange (ECURIE)** is the interface to the EU early notification and information exchange system for **radiological emergencies**, implementing a Council Decision³. Used primarily by DG ENER, ECHO and DEVCO, it works in close collaboration with the IAEA's Incident and Emergency Centre (IEC) and in synergy with the Emergency Response Coordination Centre (ERCC), operating within the European Commission's Humanitarian Aid and Civil Protection department (ECHO). The ECURIE agreement includes all the 28 EU Member States as well as Switzerland and Croatia.

Knowledge Management in Action

Assessing public exposure to natural radioactivity

The Euratom Community has established a set of basic safety standards⁴ to protect workers, members of the public, and patients against the dangers arising from ionising radiation. In this context it is essential to establish reference levels of ionizing radiation from several natural sources to which the EU population is exposed.

The JRC has collected natural radiation data and developed the **European Atlas of Natural Radiation**, which provides a collection of maps displaying the levels of radioactivity caused by different natural sources in Europe at a regional level. Overall, it contributes to estimating the annual dose that the public may receive from natural radioactivity, combining all the information from the different sources and maps.

The Atlas will be instrumental to inform and familiarise the public with the radioactive environment, giving a more balanced view of the annual dose that it may receive from natural radioactivity, and to provide reference material and generate harmonised data for the scientific and regulatory communities.

³ Council Decision 87/600/EURATOM

⁴ Council Directive 2013/59/EURATOM

Many information systems managed by the JRC have also a collaborative nature, allowing external stakeholders to engage and contribute:

- ▶ The **knowSDGs platform** (Knowledge base for the Sustainable Development Goals) was developed by the JRC as a tool to support the implementation of the 17 Sustainable Development Goals contained in the Agenda 2030, adopted in 2015 unanimously by UN Member States, and taken up in the Commission Communication 'Next steps for a sustainable European future – European action for sustainability'⁵. The platform is designed to allow interactive and easy access to data and information related to the SDGs, including an **account of the JRC datasets relevant to SDGs** and the **JRC composite index on climate resilient development**, which aims to provide knowledge to support the reconciliation of climate change policy objectives with development goals, by ensuring that climate change is systematically integrated into development strategies.

- ▶ The **Adverse Outcome Pathway Knowledge Base (AOP-KB)** is a tool that channels an expert community's willingness to approach and tackle a given problem and then freely share the answer with everyone - in a concept increasingly known as **crowdsourcing**. This emerging approach fits the paradigm shift in both science and regulation in the area of **chemical risk assessment**, which is more and more supported by the concept

of Adverse Outcome Pathways (AOP). AOPs describe a sequential chain of causally linked events leading to an adverse human health or environmental effect of regulatory concern. This crowdsourcing is managed by the OECD via a simple Wiki interface, and the European Commission (JRC) co-leads the project with the US Environmental Protection Agency (EPA).

Last but not least, the JRC is leading the **Citizen Science Knowledge Innovation Project** in the context of the **Environment Knowledge Community (EKC)** framework, created by DG ENV with CLIMA, RTD, JRC, ESTAT and the European Environment Agency to improve the sharing and co-generation of environmental knowledge for EU policies⁶. The project addresses the relationship between people and data/information – not only to monitor the state and trends of the environment and relations to human health, but also to help assessing the impact and effects of the implementation of environmental related policy across the EU. Hands-on demonstrators have been realised, based on mobile phone applications (apps) as a major enabling technology, including a **mobile app for the monitoring of Invasive Alien Species (IAS)**, which is currently being tested in the Danube Region.

⁵ COM/2016/739

⁶ C(2016) 6626 Work Programme 2017 Action 2.B.1

3.2 Knowledge Centres

Policy-making has become increasingly complex, with any given issue calling for coordination between policy makers from different fields and levels. In response, **Knowledge Centres** are virtual 'epistemic communities' built around policy problems, bringing together policy makers and scientists, gathering experience and knowledge from different locations inside and outside the Commission and co-creating the policy questions and research answers. Their function is to inform policy makers in a transparent, tailored, concise and independent manner, about the status and findings of the latest scientific evidence.

In accordance with the Governance Scheme prepared for the Information Management Steering Board meeting of September 2017⁷, the **strategic direction** of each Knowledge Centre is provided by a **Steering Group of DGs**, composed by Director-level representatives of the DGs involved in the KC, co-chaired by the lead policy DG and by JRC. The Group is setting the policy priorities around which the KC Action Plan is built, defining the strategic needs and research questions for each priority, as well as the activities to be concretely pursued.

Four Knowledge Centres have been established so far, the most recent one on 20 July 2017:

- ▶ **Disaster Risk Management Knowledge Centre;**

- ▶ **Knowledge Centre on Migration and demography;**
- ▶ **Knowledge Centre on Territorial data policy;**
- ▶ **Knowledge Centre on Bioeconomy.**

Their scope, work and main achievements are described below in more detail.

Furthermore, **two additional Knowledge Centres** are in preparation and will be launched in the near future:

- ▶ **The Knowledge Centre on Information for Global Food and Nutrition Security:** it will support the EU global commitment to end hunger, achieve food security and improved nutrition through a dedicated and reinforced science-policy interface. The Knowledge Centre will use as a point of reference the 60 developing countries in which these issues are the focus of EU intervention. The Centre will provide, *inter alia*, early warnings and crop reports.
- ▶ **The Knowledge Centre for Food Authenticity:** it will gather food fraud related information from various sources and transform it into actionable knowledge to detect fraud in the food chain at an early stage for the benefit of honest stakeholders of the food chain and EU citizens; for further use by relevant Commission services and the competent authorities in the Member States.

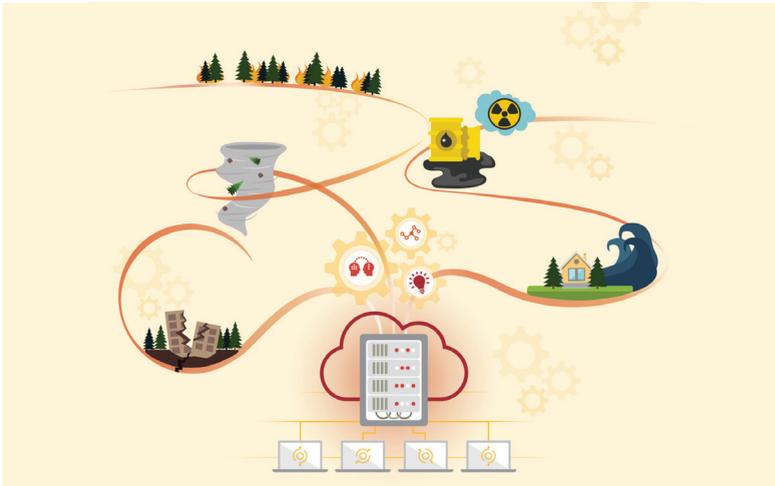
⁷ Work Programme 2017 of C(2016) 6626 on Data, Information and Knowledge Management, Action 2.B.1

3.2.1 Disaster Risk Management Knowledge Centre

The **Disaster Risk Management Knowledge Centre (DRMKC)**, launched at the end of 2015, aims at enhancing the EU and Member States resilience to disasters and their capacity to prevent, prepare and respond to emergencies through a strengthened science and policy interface. It acts as a focal point of reference in the European Commission that supports the work of Member States, relevant European Commission services and

the wider Disaster Risk Management (DRM) community within and beyond the EU.

Through the global dimension of the DRMKC, the EU supports the **Sendai framework for Disaster Risk Reduction** to promote a more systematic and reinforced science-policy interface to strengthen the contribution of DRM to smart, sustainable and inclusive growth globally⁸.



DRMKC Facts & Figures

Start: 30 September 2015

Co-chaired by DG ECHO and JRC

11 Directorates General and Services involved: ECHO, JRC, CLIMA, SANTE, SG, HOME, ENV, GROW, RTD, DEVCO, REGIO.

Key Partnerships:

- ▶ Collaborating with **34** participant countries of the Union Civil Protection Mechanism⁹ (28 EU Member States plus Iceland, Montenegro, Norway, Serbia, FYROM and Turkey);

⁸ Council Conclusions on the post 2015 Hyogo Framework for Action: Managing risks to achieve resilience, June 2014

⁹ Decision 1313/2013/EU



- ▶ Capitalising on **7** pre-established **DRM networks**, some of which co-lead with Partner DGs (ECHO,GROW), overall involving more than **60** Countries and the UN, World Bank and OECD. Co-lead of **3** GEO initiatives;
- ▶ Collaboration Agreement with Italian Civil Protection.

Knowledge resources, tools and services offered¹⁰:

- ▶ **DRMKC Bimonthly Newsletter** emailed to over **1000** registered experts (**9** published so far);
- ▶ On-line **common repository** of relevant research and operational projects and results, comprising **512 projects** involving **2546 organisations**;
- ▶ A **science advisory panel of experts and scientists** at local, national and European levels provides analyses, updates and advice into research and innovation needs in DRM;
- ▶ **European Network of Crisis Management Laboratories**. A permanent infrastructure shared between Member States and European Institutions to serve as a testbed for new crisis management technology. It organised **9** major international workshops as of July 2017;
- ▶ **DRMKC Support System**. Launched in March 2016, it provides scientific and technical advice, recommendations, guidelines, datasets and tools in support to participating countries of the Union Civil Protection Mechanism. Output: **4** Support Services activated in 2016; **3** workshops organised in 2017.

Outputs:

- ▶ **61** peer-reviewed articles and policy related outputs produced in 2016;
- ▶ **20** Workshops and Conferences organised in 2016, **10** so far in 2017;
- ▶ **23** policy impacts presented in the JRC Productivity and Impact Evaluation 2016;
- ▶ **181438** website views in 2016.

On 23 May, 2017, at the UN Global Platform for Disaster Risk Reduction in Cancun, Mexico the DRMKC presented the state-of-the-art report on '**Science for disaster risk management 2017: knowing better and losing less**'.

The report is a key part of the Science and Technology Roadmap of the **Sendai Framework for Disaster Risk Reduction**, supported by the UN Office for Disaster Risk Reduction (UNISDR). The preparation was run

by a JRC Editorial Board with strong support from the European Commission Advisory group of 79 experts in specific topics. It pulled together a network of 273 contributors from 26 (mostly European) Countries and 172 organisations, and was endorsed by 11 Commission Services.

By holistically addressing the three distinct phases of understanding, communicating and managing disaster risk, the report supports the integration of science into informed

¹⁰ as of 02/08/2017

decision making through synthesising and translating evidence for disaster risk management and strengthening the science-policy and science-operation interface.

Outlook

- ▶ Soon-to-be launched call for authors of the next volume of the Science-for-disaster series, which will be focused on assessing the impact of disasters.
- ▶ Collection of Good Practices for Risk Assessment to serve as basis for the potential **revision** of the **EC Guidelines for National Risk Assessment (NRA)**¹¹, in collaboration with DG ECHO and EU Civil Protection Mechanism (EUCPM) participant countries.
- ▶ Development of a **Risk Data Hub**, to become a platform facilitating the transmission of EU-wide and/or National risk-related data (exposure, vulnerability and hazard layers) from the scientific community to the institutions involved in the NRA development.

Knowledge Management in Action

Promoting civil protection tools and best practices across Europe

When a country is hit by a disaster which overwhelms its response capacity, European countries can provide assistance via the **EU Civil Protection Mechanism (EUCPM)**, established in 2001 to foster cooperation among national civil protection authorities across Europe and enable a more rapid and effective response to emergencies.

Via the **DRMKC Support System**, the JRC is providing scientific and technical advice, recommendations, guidelines, datasets and tools in support to EUCPM participating countries, promoting networking and sharing of knowledge, tools and best practices. Some examples are:

- ▶ The development of EU harmonized services for training activities in the domain of critical infrastructures towards the implementation of the EC Directive on critical infrastructures¹²;
- ▶ The deployment in Greece and France of the customized version of the web-platform developed by the Italian Department of Civil Protection to implement the EU Floods Directive¹³;
- ▶ The JRC training on Risk Assessment for Natural-Hazard Impact on Hazardous Chemical Installations (SEVESO directive);
- ▶ A study done by Greece on Tsunami Risk Assessment in Terms of Building Economic Losses using Geographic Information System (GIS) Tools;
- ▶ The development of EU harmonized services for recording flood events and associated damages data according to the Floods Directive and towards the implementation of the Sendai Framework.

¹¹ SEC(2010) 1626 final; ¹² 2008/114/EC

¹³ 2007/60/EC

3.2.2 Knowledge Centre on Migration and Demography

The **Knowledge Centre on Migration and Demography (KCMD)** was created in June 2016 and aims at providing solid scientific evidence to enhance the EU's capability in managing better opportunities and challenges stemming from migration and demographic change. It allows for analytical and networking activities accompanied by a repository of relevant research and new initiatives to deepen knowledge and

understanding. It addresses both short and mid-to-longer term needs.

It currently focuses on **six policy priorities**, agreed upon by the Steering Group in March 2017 for the period 2017-2018: legal migration and integration, external dimension of migration, children in migration, smuggling, irregular migration and forced (internal) displacement.



KCMD Facts & Figures

Start: 20 June 2016

Co-chaired by DG HOME and JRC

9 Directorates General and Services members of the Steering Group: DG HOME, JRC, SG, DEVCO, ECHO, RTD, ESTAT, EPSC, EEAS, and 8 additional Directorates General **associated** EMPL, ECFIN, EAC, REGIO, JUST, NEAR, COMM, CLIMA.

Key Partnerships:

- ▶ International Institute for Applied Systems Analysis (**IIASA**);
- ▶ Organisation for Economic Cooperation and Development (**OECD**);
- ▶ International Organization for Migration (**IOM**) & IOM Global Migration Data Analysis Centre (**IOM-GMDAC**);

- ▶ Global Knowledge Partnership on Migration and Development (**KNOMAD**)
European University Institute – Migration Policy Centre (**MPC**);
- ▶ The UN Refugee Agency (**UNHCR**);
- ▶ United Nations Children’s Fund (**UNICEF**).

Knowledge resources, tools and services offered:

- ▶ **Migration Data Catalogue**, an inventory of more than **100** existing datasets linked to demography and migration, made available by international organisations, the Commission, EU agencies and administrations of some EU Member States;
- ▶ **Dynamic Data Hub**, a web-based application built on the data catalogues, giving direct access to selected datasets to undertake analyses of migration flows to the EU;
- ▶ **Inventory of Commission activities on Migration and Demography**, a list of initiatives, studies and other related output for each Directorate General;
- ▶ **Country migration profiles** to support the new *Migration Partnership Framework*¹⁴ with third countries. The Mali migration profile, just released, will be followed by four priority countries: Nigeria, Senegal, Niger and Ethiopia.

Outputs

- ▶ **7** peer-reviewed articles and policy related outputs produced in 2016;
- ▶ **3** Workshops and Conferences organised in 2016, **13** other events so far in 2017;
- ▶ **13049** website views in 2016;
- ▶ **2550** accesses to the Dynamic Data Hub between February and July 2017.

In December 2016, the KCMD organised the Global Conference *Improving Data on International Migration*, under the auspices of the UN International Organization for Migration, bringing together about 200 experts on migration data from academia, governments, the private sector and civil society from across the world. It was in this occasion that the **Dynamic Data Hub (DDH)** was launched.

Thanks to the DDH, in 2017 the KCMD was able to reply to ad-hoc requests put forward by Commission services

and EEAS for the *Joint Communication for a renewed impetus of the Africa-EU Partnership*¹⁵ and the *Reflection Paper on the Social Dimension of Europe*¹⁶. Currently, a contribution to the *mid-term review of the European Agenda on Migration* is being prepared, as well as scenarios for the negotiations on the *revision of the Asylum system*, data for the *Fitness check on Legal Migration* and for the *EU Semester*.



¹⁴ COM(2016) 385 final;

¹⁵ JOIN(2017) 17 final, 4.5.2017

¹⁶ Political publication from the European Commission, 26 April 2017

Outlook

- ▶ Release of the **Migration Knowledge Catalogue**.
- ▶ Release of **Migration Profiles** for Nigeria, Senegal, Niger and Ethiopia as well as short versions for additional countries, starting with Morocco, Algeria, Tunisia.
- ▶ Continuous enrichment of the Dynamic Data Hub with new datasets, including for **children**, as requested by the *Commission Communication on the protection of children in migration*¹⁷.
- ▶ Development of an **Atlas on migration**, to illustrate migration and mobility within Africa, regional differences and their potential impact on migratory flows towards the EU.
- ▶ Creation of **Migration Inclination Indices**, to provide information on root causes, incentives and determinants of migration, and to monitor the effects of migration-related policies.

Knowledge Management in Action

Mapping of migrant communities in cities

Integration of migrants is a major challenge for many city authorities.

In line with the **Urban Agenda for the EU** goal to enhance the knowledge base on urban issues, the JRC produces high resolution maps of migrant communities in cities, based on national census data. The maps provide an indication of how population by nationality or country of birth is distributed, and allow for analyses of different models of spatial distribution in the urban landscape adopted by cities and migrant communities.

The spatial structure of migrant communities can explain different outcomes of integration and pressures on local services in Europe. Using these maps, local authorities will be able to design better, tailor-made policies for education, social services, housing, work, transport, etc.

Examples of such maps have already been produced for Rome, London and Amsterdam. Maps for cities in Italy, Germany, France, Spain, UK, Ireland, Portugal and the Netherlands will become available as from the second half of 2017, and wider dissemination of these data to authorities is planned for 2018.



¹⁷ COM(2017) 211 final, 12.4.2017

3.2.3 Knowledge Centre for Territorial Policies

The **Knowledge Centre for Territorial Policies (KCTP)** was established in October 2016 with the purpose to gather, manage and make sense of the vast amount of knowledge available on European cities and more than 300 European regions, to help boost their competitiveness, preserve their diversity, and improve the quality of life of its citizens. By better

integrating and coordinating the supply and demand for knowledge related to the broad range of EU territorial policies (including macro-regions, urban, rural, neighbourhood and development policies, as well as the territorial dimension of EU thematic policies) it aims at increasing the efficiency in which this knowledge is shared and used.



KCTP Facts & Figures

Start: 11 October 2016

Co-chaired by DG REGIO and JRC

6 Directorates General and Services involved: REGIO, JRC, MOVE, ENER, ENV, SG.

Key Partnerships:

Capitalising on pre-established platforms such as the one on Smart Specialisation (S3), with **over 160 regions** and more than half of EU Member States as registered members.

Knowledge resources, tools and services offered:

- ▶ **Smart Specialisation Platform (S3)**, assisting EU countries and regions to develop, implement and review their R&I Strategies for Smart





Specialisation (RIS3). It integrates **thematic platforms** on **Energy, Industrial Modernisation** and **Agri-Food**;

- ▶ **RHOMOLO**, a holistic economic model focusing on EU regions, developed by JRC and DG REGIO, used for policy impact assessment by providing sector-, region- and time-specific simulations to support EU policy making on investments and reforms;
- ▶ **LUISA** (Territorial modelling platform) a modelling framework that aims to capture, at a very fine geographical scale, the impacts of territorial policies on Europe. It has been used repeatedly for ex-ante policy evaluations for the European Commission;
- ▶ The **Urban Data Platform**, offering single access via an interactive interface to data and indicators on the status of and trends in European urban areas, collected from sources such as EUROSTAT, National Statistical Services and OECD.

Outputs:

- ▶ **36** peer-reviewed articles and policy related outputs produced in 2016;
- ▶ **3** Workshops and Conferences organised;
- ▶ **19** policy impacts presented in the JRC Productivity and Impact Evaluation 2016;
- ▶ **8452** website views in 2016.

The KCTP has **three time-sequential aims**:

▶ In the initial phase, based upon existing services (hence already usable), to offer access to existing territorial knowledge through a unified **Web portal**.

▶ On the short/medium term, to provide analysis by addressing policy

questions either thematically or based upon geographical analysis.

▶ In the longer term, connecting all institutional, scientific and policy stakeholders on territorial policies, such as the Committee of Regions, the European Parliament, the World Bank and others.

Outlook

- ▶ Development of a **database with key regional economic indicators** including projections and back-casting, at the level of small regions (NUTS-3).
- ▶ The creation of **catalogues of territorial datasets**, as component of the KCTP Web Portal.
- ▶ A **Territorial Dashboard** for thematic and geographic analysis (phased releases).
- ▶ Dissemination of the **Territorial Reference Scenario 2017**, as implemented by the LUISA modelling platform.

Knowledge Management in Action

A new knowledge source for Europe's Cities

To support the **Urban Agenda for the EU**, the Commission presented in 2016 a State of European Cities Report, with the objective of promoting more evidence-based urban policy making in Europe. The report analysed the performance of European cities with regard to the priority themes of the Agenda (jobs and skills, poverty, climate change mitigation and adaption, energy transition, air quality, mobility etc.) as well as the 2030 Urban Sustainable Development Goal of the United Nations to make cities safe, inclusive, resilient and sustainable.

The **Urban Data Platform** set up by the JRC, collected the data behind the report, thereby facilitating access to them. Hosted by the Knowledge Centre for Territorial Policies, it now provides a single access point to common indicators on the status and trends in over 800 European urban areas – on demography, economic development or access to services, for example. It will continue providing to urban authorities and stakeholders an instrument for data comparison, benchmarking and monitoring, which is one of the aims of the EU Urban Agenda.

3.2.4 Knowledge Centre on Bioeconomy

The **Bioeconomy Knowledge Centre (BKC)** was launched in Brussels on 20 July 2017. It will be the Commission's central knowledge hub on the bioeconomy, serving the needs of all the European Commission Directorates general and Services with a stake in the topic. It will support the European Commission in the review of the 2012 Bioeconomy Strategy¹⁸, taking into account new political and policy developments, such as the COP21 Paris agreement, the United Nations' Sustainable Development Goals and the Circular Economy Package¹⁹. The Centre will have two key functions:

- ▶ First, knowledge demand: helping knowledge users (i.e. policy DGs) identifying the knowledge they really need.

- ▶ Secondly, knowledge supply: informing knowledge producers (inside and outside the Commission) about the knowledge needs of the knowledge users; making available relevant knowledge (data, information, expertise) to (EU-)policy makers and stakeholders.

Given the wide range of scientific disciplines and technologies that play a role and the many policies and economic sectors that are concerned or impacted by, as well as impacting, the bioeconomy, the BKC will have a very wide scope, ranging from socio-economic sciences over life sciences and biotechnology, to transport logistics, waste management, environmental impact assessment and more. This multidisciplinary dimension will

¹⁸ COM(2012) 60 final I

¹⁹ COM/2015/0614 final & annexes

be built-up over time by networking data and knowledge sources and providing tools to reach and analyse relevant knowledge.



BKC Facts & Figures

Start: 20 July 2017

Co-chaired by DG RTD and JRC

15 Directorates General and Services involved: DG RTD, JRC, SG AGRI, GROW, ENV, ENER, MARE, CLIMA, REGIO, DEVCO, MOVE, TRADE, EAC, EMPL.

Key Partnerships:

More than 250 participants attended the launch event, including representatives of European Commission/Institutions, the European Bioeconomy Stakeholders' Panel, the European Bioeconomy Alliance, relevant Technology Platforms, Joint Programming Initiatives, European Innovation Partnerships and others.

Knowledge resources, tools and services offered:

- ▶ An **ICT platform**, partly functioning as a meta-website that links to relevant other websites and databases, will be central to the functioning of the BKC. It will allow knowledge producers to make available their (quality controlled) relevant data and information, and to interact with each other;
- ▶ A **Community of Practice** will provide access to experts from the many disciplines and areas of the bioeconomy, covering the multidimensional nature of the concept.

3.3 EU Policy Lab

The EU policy Lab is a collaborative and experimental space for innovative policy-making.

Launched on the 17 October 2016 it has the mission to support innovation into policymaking through experimenting new tools, methods and approaches applied to policy issues and problems by bringing together, and where possible combining, foresight, behavioural insights and design for policy.

It provides support to European Commission policy DGs and Services (SG, CNECT, GROW, ENV, JUST, RTD, NEAR), through design-based innovative exploratory sessions, prototyping and testing of tools and method, service design and stakeholder and public engagement processes.

It delivers behavioural advice and research (including Randomised Control Trials) and runs training on behavioural insights applied to policy. It carries out foresight studies and other future-oriented services.

In its first year of activity, it organised **96** events/workshops, of which 46 led and 24 co-organised with different partners in 25 countries. The **EU Policy Lab Blog** received 13582 visits.

Other examples of key achievements are:

- ▶ **The Foresight study ‘Delivering on EU food safety and nutrition in 2050’**, jointly developed by the EU Policy Lab and the JRC Directorate for Health, Consumers and Reference

Materials, has been the basis of the symposium ‘The future of food in the EU’ co-organised by the JRC and the Trio presidency of Malta, Slovakia and the Netherlands. Its conclusions were presented to the Agriculture and Fisheries Council on 17 July 2017.

- ▶ **The Behavioural Insights Applied to Policy (BIAP) Report 2016** provided a first systematic mapping and analysis of the take up of behavioural insights to support policy making in Europe, including the development of associated behavioural insight teams and structures. The report has been a basis for raising awareness in and outside the commission as well as to develop cooperation with EU member States.

- ▶ **The Scenario Exploration System:** a board game created by the EU policy Lab to explore future scenarios in a participatory way won the 2016 award of the Most Innovative Futures Work delivered by the Association of Professional Futurist. It has been extensively used both inside the Commission and by external stakeholders in Europe and beyond.

- ▶ **The Future of industry project** consisted of the development and testing of a foresight process to develop a long-term vision for industrial manufacturing sectors for DG GROW. The methodology was successfully tested on two manufacturing sectors (i.e. textile and clothing and non-ferrous metals) in close collaboration with European industrial associations and other stakeholders. The Industrial associations have been using the

vision to engage with policymakers at different territorial levels. The methodology has been delivered to DG GROW and it can be further applied to other industrial sectors.

- ▶ **The Megatrends Hub:** a dynamic collective intelligence system assessing a set of 14 global megatrends that are relevant for the future of Europe. Its structure offers a framework for a systemic organisation and systematic updating of potential

factors of change. The system is continuously updated through literature review and with events and forecasts identified through horizon scanning by staff and colleagues from other JRC units, or insights from external experts. It brings together qualitative and quantitative views from authoritative and validated resources, as well as related JRC and other EC work (e.g. TIM, modelling activities, EMM), offering a comprehensive and aligned overview of the megatrends.

3.4 Methodology and capacity building

A year after the establishment of the knowledge management layer, the JRC has moved on significantly towards positioning itself as a **global leader in the concept, theory and practice underpinning knowledge management for policymaking**. A variety of concerted actions were deployed to:

- ▶ utilise the expertise already available inside the JRC,

- ▶ harness the knowledge produced at the forefront of the area by authors worldwide,

- ▶ build strong networks with strategic partners and

- ▶ accompany this with new training, projects and processes in the JRC and the wider Commission.

3.4.1 Concepts and Methods

A ground-laying effort to identify best practices and **most promising new approaches** to manage knowledge for policymaking has been carried out, with the **results being shared** with the knowledge management community and the wider Commission through a dedicated **Knowledge Management for Policy site on Connected**. The site has some 500 active users inside the Commission and it is one of the most popular groups on Connected.

Simultaneously a dedicated effort has been made to **map and connect with the most published authors, acknowledged thinkers and practitioners** in the field of evidence for policy. An infographic of the **Landscape of the evidence for policy community** was produced in December 2016, which is the first such attempt in the area. The JRC is now involved in close collaboration with all of the identified key actors.

A concrete action is focused on identifying **skills and competences for effective knowledge management for policy**, scientific advice to policy and evidence informed policymaking. The JRC hosted 40 of the leading experts on 17 March 2017 in Brussels for a **participatory workshop** aiming to reach a consensus on what this collective skill set is. The JRC is currently in the process of finalising the resulting **skills map** which could be used by any organisation at the science/policy interface seeking to increase impact on policy.

Another initiative sought to identify the most promising approaches to measuring impact of evidence on policies. The JRC gathered more than 110 experts on both the demand and the supply side on 20 June 2017

for a Workshop **'Policy Impact of Knowledge and Knowledge Organisations: From Understanding Impact towards measuring it'**. The JRC also ran a mini session on the same topic at a meeting of the **Small Advanced Economies Initiative at the WEF in Geneva on 24 May 2017**. The results of both meetings are being analysed.

An initiative on how to **re-design knowledge for policymaking using behavioural and decision science** is ongoing. The JRC is looking at cutting edge research on how evidence and data can be effectively balanced with values and emotions when policy decisions are taken, whether through policy labs, 'red-teaming', de-bunking techniques, using narratives, impact assessment etc.

3.4.2 Networks and Partners

Having identified the **convening power** and the **networking performance** of an organisation as the leading indicators of knowledge management influence, the JRC has invested substantial efforts to solidify its leading position at the interface between evidence and policy.

- ▶ An evidence for policy **Community of Practice**, launched in mid-February 2017, with more than 80 plus members as of now, is giving access to a library of 200 influential publications, videos and sources in the field.
- ▶ Strong collaboration with the **International Network for Government Science Advice (INGSA)** has manifested itself through a number of joint

activities and contributions: Science and Policy-Making: towards a new dialogue in Brussels, September 2016; Principles and guidelines for social science advice to policy in Berlin, April 2017; Science Advice in Denmark and the Nordic Countries in Copenhagen, April 2017). The JRC has also contributed to the INGSA's process of defining guidelines and principles for science advice to policy.

- ▶ An equally important partnership was formed with the **OECD** with a promising angle of bringing closer to the evidence community the demand side of policymakers. A successful conference on **'Governing better through evidence informed policymaking'** in Paris on 26-27 June 2017



gathered some 140 leading experts and national administration delegates. As a result a joint project is being prepared.

► Continuing active presence at the interface of evidence and policy worldwide has also resulted in the

JRC organising a **session at the AAAS Annual Meeting on 18 February 2017** in Boston. Some 120 experts gathered to learn about the JRC's approach towards knowledge management for policy.

3.4.3 Projects, Processes



The JRC is building knowledge and expertise about the **process of co-creation of knowledge and policy**, stimulating the motivation to use knowledge in policy and the ability to turn scientific results into stories with implications for policy. The **2016 EU-AU-IIASA Summer School on Evidence and Policy** took place between 30 August and 2 September 2016 and brought together more than 100 scientists and decision-makers from 45 countries working at the water-energy-food nexus. The 2017 JRC-Slovak Academy of Science (SAS)-INGSA Summer School, which focused on migration and demographic change in Central and Eastern Europe and the

neighbouring countries, took place on 6-8 September in Senec, Slovakia.

The JRC has acquired knowledge in the area of **research synthesis** and has forged close contacts with leading practicing international networks. The objective is to build this up to a specific competence in the JRC Knowledge Management Units.

Work with the **RSB and SG** to establish a more rigorous use of evidence for policymaking in the impact assessment and evaluation processes has advanced through participation at meetings, events and consultations.

3.4.4 Capacity Building



All of the above actions directly fed into a body of knowledge and expertise, which will be used as a blueprint for capacity building inside the JRC. So far three **Pilot Evidence & Policy courses have taken place** (1-2 February, 3-4 April, 6-7 June 2017). As a result, some **50 JRC scientists and knowledge managers** have been trained and subsequently

contributed to the improvement of the pilot course curricula. A final overview is being prepared. It will be the basis for the multi-annual training strategy in knowledge management for policy.

In line with Work Programme 2017 accompanying the Commission's Communication on Data²⁰, Information and

²⁰ C(2016) 6626 final

Knowledge Management a **skills map** was drawn up, leading to identifying gaps in the current competences available at JRC and to designing a **Knowledge Management Professionalisation programme**. The programme, was successfully presented

in the Commission's Knowledge Management Network coordinated by DG HR, and is accompanied by the design of a set of job profiles, usable as reference for the JRC Knowledge Management Units as well as by other Commission Services.

3.4.5 Science communication and visualisation

The JRC Strategy 2030 calls for a 'root and branch' reform of DG JRC'S approach to communications to 'alter the perceptions that different groups have of the JRC and the way in which they engage or interact with it'. In a knowledge management context, this means communicating pertinent knowledge that feeds into EU policies more effectively to targeted audiences and adapting the content of the messages better to these audiences for maximising impact.

The approach developed is geared towards better exploiting holistically flagship events, exhibits, (social) media and **data visualisation/graphics**.

In 2016-2017 about 75 scientists and other JRC staff were trained on how to visually communicate complex issues and key findings, via three training events designed to raise awareness on infographics and explain how to

create them. The training was very successful, and is going to be offered regularly in the future.

A cross-JRC visualisation task force, supported by a dedicated platform on Connected, was set up during the first **JRC visualisation workshop** on the 10th of November 2016 in Ispra, where more than 80 JRC colleagues produced a JRC concept document for knowledge visualisation. The task force will be divided into different disciplines related to visualisation and via the platform will provide a one-stop-shop for information, guidance, expertise and inspiration in all areas from 3D to infographics, to presentations and to maps. The JRC will develop guidelines for the use of visualisation in the Commission as part of the IMSB work programme.



Managing Competences

04

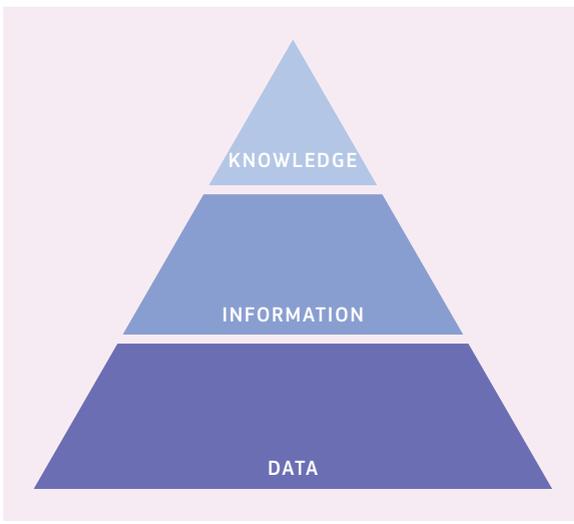
4.1 Hosting, organising and sharing data

Every year the JRC produces and uses a wealth of data which are the basis for evidence-based policy-making. To use this capability for the Commission's political priorities as well as to better coordinate the current data analytics activities which are fragmented across different DGs, the JRC is investing in innovative ways of deriving information and knowledge from these data.

In line with the Commission Communication on Data, Information and Knowledge Management²¹, the JRC is committed to make available and share its research data with researchers, information professionals, entrepreneurs and the general public.

The **JRC Data Catalogue** is an online platform, offering access to data produced by JRC researchers, alone or in cooperation with partners. It currently contains 1629 datasets from 44 dataset collections. Data on a vast array of topics such as agriculture and food security, economy, environment and climate as well as health and consumer protection can be accessed through this new platform.

The catalogue is updated regularly and feeds into the **EU Open Data Portal**, which is the single point of access to a growing range of data produced by the EU institutions, aiming to highlight the potential economic power of the data and increase transparency and accountability of EU institutions.



Knowledge pyramid.

²¹ C(2016) 6626 final

4.2 Data processing and visualisation

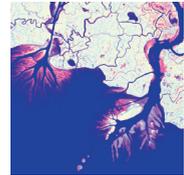
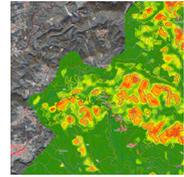
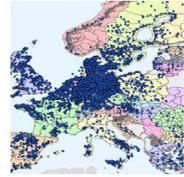
The power of data can only be exploited if adequate tools are available to make sense of them. The JRC is developing innovative platforms for data processing and visualisation.

The **EMHIRES dataset** (European Meteorological-derived High resolution Renewable Energy Source generation time series) is a downloadable set of data, which models renewable energy production over time. It is designed to cover the EU Member States for the last 30 years at sub-national level (regions, provinces, or counties), and the major renewable energy resources (wind, solar, hydro). It can be used for studying the power system with high penetration of renewables but also for energy planning, identification of the most suitable areas/potential sites for exploitation renewables, technical potentials, influence of technology in the total estimated generation, etc. for the current situation and future scenarios for the evolution of the European energy system.

The **JRC Earth Observation Data and Processing Platform (JEODPP)** provides petabyte scale data storage and data mining capabilities while fostering collaborative working and knowledge sharing. Innovative big data technologies and data science tools including interactive visualisation and

analysis allow the production of new knowledge as well as their management. It serves applications ranging from global human settlement identification to forest and agriculture monitoring, from automatic ship detection to biodiversity and energy. The platform is currently focusing on Earth Observation/geospatial data for policy analysis, linking with other free and open data.

The **Global Surface Water Explorer** is a water dataset developed in the Copernicus Programme. It maps the location and temporal distribution of water surfaces at the global scale over the past 32 years and provides statistics on the extent and change of those water surfaces, thereby making readily available accurate knowledge on surface water dynamics at global level at an adequate scale of detail. Using three million Landsat satellite images (courtesy of the United States Geological Study (USGS and NASA), the system quantifies changes in global surface water over the past 32 years at 30-metre resolution. It records the months and years when water was present, where occurrence changed and what form changes took in terms of seasonality and persistence.



Knowledge Management in Action

Assessing the human presence on the planet

Powered by the JRC Earth Observation Data and Processing Platform, the **Global Human Settlement Layer (GHSL)** is producing global spatial information about the human presence on the planet over time, in the form of built up, population density and settlement maps.

This information is relevant in several policy contexts, such as sustainable development, housing and urban development policies, disaster risk management as well as migration.

The GHSL has recently been used to produce the **Atlas of the Human Planet 2017 - Global Exposure to Natural Hazards** summarising exposure of human settlements to six major natural hazards (earthquakes, volcanoes, tsunamis, floods, tropical cyclone winds, and sea level surge), based on the global built-up area and resident population.

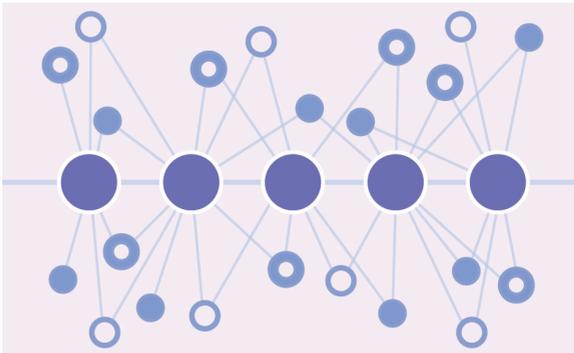
4.3 Competence Centres

Whereas Knowledge Centres are structured around a policy challenge, **Competence centres** are centred on analytical tools, which can be applied to any policy area, bringing together in one place extensive expertise in this field. They offer training courses in the use of the tools for policy-making, advice on the choice of tools and also work directly with the Commission policy Directorates-General to apply the tools to the policy problems at hand.

Three Competence Centres have been established so far:

- ▶ **Competence Centre on Composite Indicators and Scoreboards**
- ▶ **Competence Centre on Micro-economic Evaluation**
- ▶ **Competence Centre on Text Mining and Analysis**

An additional **Competence Centre on Modelling** will be launched in October 2017.



4.3.1 Competence Centre on Composite Indicators and Scoreboards

The **Competence Centre on Composite Indicators and Scoreboards (CC-COIN)**: launched in February 2016, its objective is to contribute to **better monitor the impact of EU strategies & policies** at national, regional and local level by (co)developing and **auditing** composite indicators (performance indices) and scoreboards summarising multi-dimensional processes into simplified concepts.



CC-COIN Facts & Figures

Start: 3 February 2016

Partnerships & Networks:

- ▶ 10 JRC units (A.6, B.1, B.3, B.7, C.3, C.5, C.7, D.1, D.5, E.1);
- ▶ 20 units in policy DGs and EU services (SG, BUDG, EAC, EMPL, RTD, GROW, REGIO, ENER, CLIMA, AGRI, ECFIN, DEVCO, ECHO, COMM, EEAS, JUST, NEAR);
- ▶ 3 Member States (Germany, Italy, Spain);
- ▶ 17 international organizations (e.g. OECD, WIPO, Cornell University, UN).

Competences, tools and services offered:

- ▶ Support to policy DGs on the development of new/revision of existing indices, scoreboards and indicators frameworks;
- ▶ Support to EU Member States and international organisations on the revision of influential indicator frameworks;
- ▶ COIN Explorer;
- ▶ Training on methodological advances for indices;



- ▶ Advice, support and collaborate with JRC colleagues on indicator framework.

Outputs:

- ▶ 22 peer-reviewed articles and policy related outputs produced in 2016;
- ▶ 8 policy impacts presented in the JRC Productivity and Impact Evaluation 2016;
- ▶ 4677 Website views in 2016.

Global Talent Competitiveness Index:

The JRC has been invited for the fourth time to contribute its statistical expertise to the Global Talent Competitiveness Index (GTCI), which was launched at the World Economic Forum Annual Meeting in Davos in January 2017.

Global Innovation Index 2016: The

independent statistical assessment of the GII provided by the JRC guarantees the transparency and reliability of the index for both policy makers and other stakeholders, thus facilitating more accurate priority setting and policy formulation in this field.

Cultural and Creative Cities Monitor:

This new tool developed by the Joint Research Centre (JRC) provides comparable data on how European cities perform across nine dimensions – covering culture and creativity – and underlines how their performance contributes to cities' social development and economic growth and job creation.

Indicator Framework for the JRC strategy 2030:

Each year the JRC will submit a Progress Report to the Commissioner and the Board of Governors charting the JRC's progress in implementing the strategy. This document provides quantitative indicators and graphics which will be used to measure and monitor the effective execution of the strategy against its goals. A comprehensive set of 42 indicators were proposed, consisting of both existing (40%) and new indicators (60%).



*Knowledge Management in Action***A Social Scoreboard for the European Pillar of Social Rights**

Building a fairer Europe and strengthening its social dimension is a key priority for this Commission. The European Pillar of Social Rights is accompanied by a **'Social Scoreboard'** which will monitor the implementation of the Pillar by tracking trends and performances across EU countries in 12 areas and will feed into the European Semester of economic policy coordination. The scoreboard will also serve to assess progress towards a social 'triple A' for the EU as a whole.

The Social Scoreboard is structured around three dimensions (all of them 'people-centred'):

- ▶ 'Equal opportunities and access to the labour market', covering aspects of fairness related to education, skills and lifelong learning, gender equality in the labour market, inequality and upward mobility, living conditions and poverty, and youth;
- ▶ 'Dynamic labour markets and fair working conditions', covering labour force structure, labour market dynamics, and income;
- ▶ 'Public support / Social protection and inclusion', covering fair outcomes through public support and/or social protection.



4.3.2 Competence Centre on Micro-economic Evaluation

The **Competence Centre on Micro-economic Evaluation (CC-ME)**: launched in May 2016, its mission is to enhance the EU policy process through ex-post causal evaluation and data-driven microeconomic analyses. It contributes to better evaluations for better regulation and better spending in the EU.



CC-ME Facts & Figures

Start: 19 May 2016

Partnerships & Networks:

- ▶ JRC units (all Directorate B units, C.3, C.5, C.7, D.1, D.5);
- ▶ Policy DGs and services: SG, EAC, EMPL, RTD, GROW, HOME, RSB;
- ▶ 10 Universities.

Competences, tools and services offered:

- ▶ Support and analysis for policy DGs and Member States on ex-post Counterfactual Impact Evaluation (CIE). Collaborate and advise JRC units;
- ▶ Support and analysis on data collection design, data access and data crunching across all phases of the policy cycle;
- ▶ Training on counterfactual methods and data requirements;
- ▶ Advice on terms of Reference for service procurement on CIE;
- ▶ Econometric studies (REFIT, NZ, European Social Fund, EU research funding, evidence base for the EU semester, collaboration with New Zealand statistics office).

Outputs:

- ▶ **8** peer-reviewed articles and policy related outputs produced in 2016;
- ▶ **2** policy impacts presented in the JRC Productivity and Impact Evaluation 2016;
- ▶ **1278** Website views in 2016.

Guidance on Counterfactual Impact Evaluation of Asylum, Migration and Integration Fund (AMIF) and Internal Security Fund (ISF): CC-ME prepared guidance documents which included the methodology to carry out the interim and ex post evaluation for ISF and AMIF (legal migration), mainly targeted to the Member States.

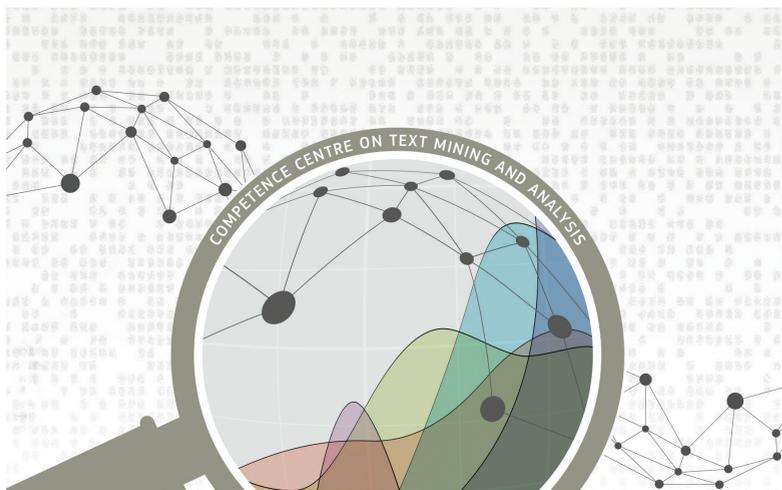
European Semester: Evaluation of implementation of Country-Specific Recommendations: in close collaboration with the leading DGs in the European semester, the JRC is contributing to the streamlining of the semester process, as originally foreseen in the *Communication from the Commission to the European Parliament, the Council and the European Central Bank on steps towards Completing Economic and Monetary Union*²².

²² COM(2015) 600 final

4.3.3 Competence Centre on Text Mining and Analysis

The **Competence Centre on Text Mining and Analysis (CC-TMA)**: launched in December 2016, with the task to develop Text mining techniques and tools needed throughout the EU institutions, it also provides two important tools: the Europe Media Monitor (EMM) and the Tool for Innovation Monitoring (TIM).

Monitoring the Internet for trends has a strong potential to inform sound policy action. Through this Competence Centre, the JRC operates some customised tools for text mining and analysis.



CC-TMA Facts & Figures

Start: 13 December 2016

Partnerships & Networks:

- ▶ JRC units in all Directorates;
- ▶ Policy DGs and services: COMM, DEVCO, ENV, HOME, RTD, SANTE, Europol, EP, Council, EFSA, Frontex;
- ▶ International organisations: WHO.

Competences, tools and services offered:

- ▶ **EMM Newsexplorer** provides advanced analysis systems for monitoring both traditional and social media, generating daily news summaries, analyses in different languages over time, and information on the most mentioned people and organisations in the media;
- ▶ The **EMM NewsBrief** is updated every 10 minutes, 24 hours per day. It gathers reports from news portals world-wide in 43 languages,

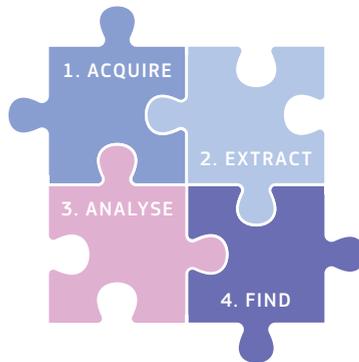
classifies the articles, analyses the news texts, aggregates the information and issues alerts;

- ▶ **The Tool for Innovation Monitoring (TIM)** aims at providing specific and relevant knowledge on innovation and technological development. It offers the possibility to policy-makers to answer concrete policy needs related to innovation networks, impact evaluation of EU programmes, emerging trends and technologies, funding orientations, regional strategies, and other needs related to research and innovation policy.

Work Programme 2016-2017:

- ▶ **37** outputs (reports, peer-reviewed articles and others) produced;
- ▶ **2** policy impacts presented in the JRC Productivity and Impact Evaluation 2016;
- ▶ **97** Website views in 2016.

1. Acquire documents from internet and local resources
2. Extract entities and relationships
3. Organise findings and combine with prior knowledge
4. Find open source information



It comprises a set of powerful tools to support the main processes of intelligence gathering from open sources.

The system can be customised to support a wide range of law enforcement use cases, including typical scenarios such as person background check, relationship exploration of persons, organisations and other entities, categorising downloaded material according to word patterns.

The **EMM Open Source Intelligence Suite (EMM OSINT Suite)** is a desktop software application which helps to find, acquire and analyse data from the Internet and local sources. It contains a set of tools to automate tasks to gather intelligence from open sources, thus reducing the need to search manually through vast data sets.

The main partner is DG HOME: the JRC provides technical support, intelligence techniques and research to improve operational cross-border cooperation and assist Member State authorities in law enforcement in areas such as cybercrime and open source intelligence.

Knowledge Management in Action

Mapping European innovation in energy

The Tools for Innovation Monitoring (TIM) software allows tracking the evolution of established and emerging technologies using text mining and semantic analysis to visualize complex data sets and provide insights of the innovation life cycle. A geographical component allows its use as regional innovation intelligence and benchmarking tool, facilitating the analysis of latest trends in innovation and research for Member States and international trading partners.

In the context of SETIS, the JRC Strategic Energy Technologies Information System described in section 3.1 of this report, TIM helps mapping technologies and innovations in the field of Energy.

The use of TIM provides SETIS with a quick indication of research collaboration networks and facilitates the identification of emerging technologies, providing useful visual representations. This allows for quick filtering of data offering additional insights to the experts' work. TIM Energy was made available to the public at the SET-Plan conference in Bratislava (SK, 30 November - 2 December 2016).

4.3.4 Competence Centre on Modelling

The **Competence Centre on Modelling** to be launched on 26 October 2017 promotes a responsible, coherent and transparent use of modelling to underpin the evidence base for EU policies. It leverages the modelling capacity and competences across the Commission and beyond. Starting with a Commission-wide modelling

inventory, it supports a proper documentation, use and reuse of models. It further helps setting standards for transparency and quality of modelling through a dedicated Community of Practice.

CC-MOD Facts & Figures

Start: 26 October 2017

Partnerships & Networks:

- ▶ JRC units: B.3, C.3, C.5, D.4;
- ▶ Policy DGs and services: SG, EEA, all DGs are member of the ISG for Modelling Inventory;
- ▶ International organisations: OECD.

Competences, tools and services offered:

- ▶ Inventory and knowledge management system of models used in the Commission;
- ▶ Quality assurance tools and services for policy modelling;
- ▶ Consistency of baseline and foresight scenarios.

Modelling Inventory Database & Access Services (MIDAS): it is a database of models that are in use in the Commission for policy support. Accessible from within the Commission Network, MIDAS gives access

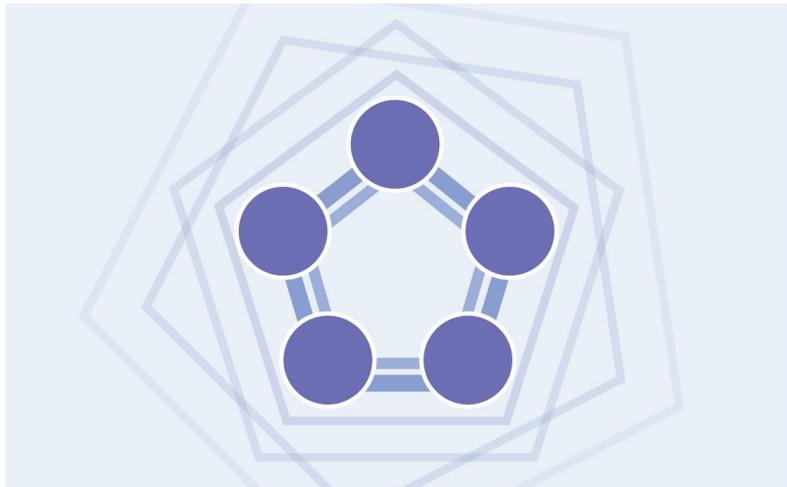
to model descriptions and links to related input and output data, impact assessments and other policy documents, as well as scientific publications and policy reports. Its main purpose is to break silos and to link

models, data, policies, and people in order to support knowledge sharing and collaboration, model transparency and consistency, and enhanced traceability of model results for policy making. Initiated in 2013, MIDAS was taken up in 2016 as a tool within the **Better Regulation Toolbox**. Following this, and the recommendations of the **High Level Reflection Group on Information Management**, MIDAS has been rolled out to the Commission

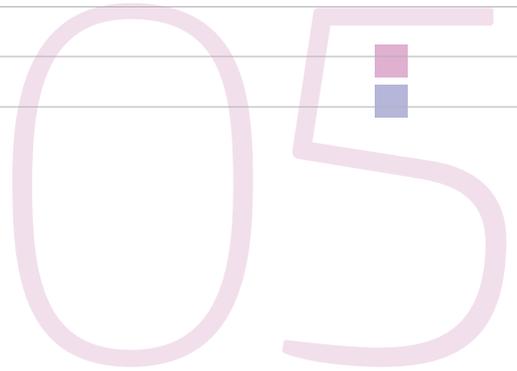
as a **Corporate Model Inventory** in 2016. MIDAS is currently used both by modellers, who create model descriptions to be displayed in MIDAS and analysed through the MIDAS knowledge engineering tools, and by model users and policy makers seeking to find models (e.g. for impact assessment and policy support) or related datasets, model descriptions and documents.

MIDAS Portal: some key figures

- ▶ 215 Models
- ▶ 533 datasets
- ▶ 715 documents
- ▶ 120 Impact assessments
- ▶ 41 legal texts
- ▶ 891 visitors for a total of 12 388 page views in the 1st semester 2017



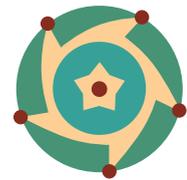
Collaborative Working



5.1 Connected Platform

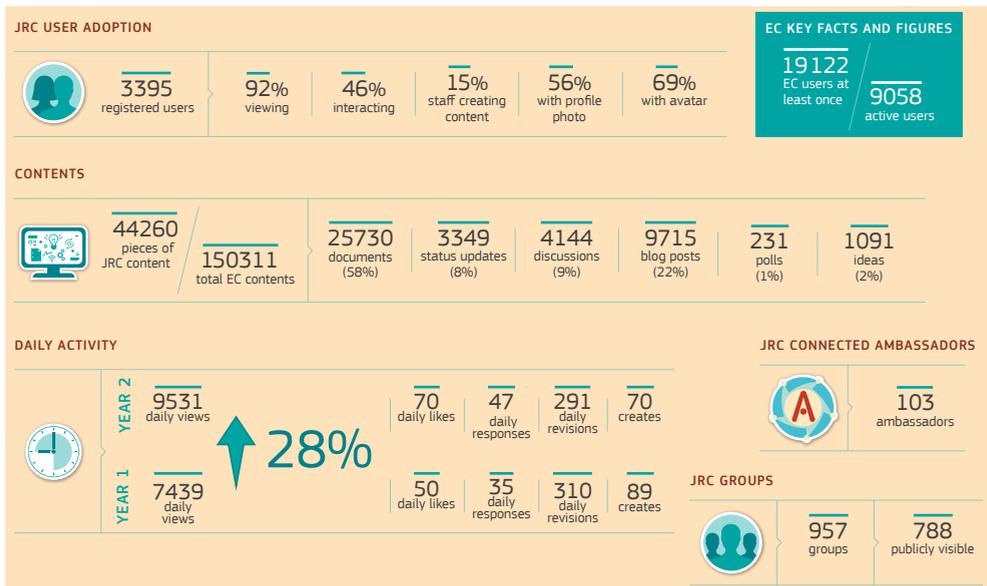
The Connected project started as a pilot in DG CNECT in 2012. In March 2015 the JRC launched **Connected@JRC** as its main internal communication and collaboration tool²³, following up on a decision to replace its former 10 Intranets and consolidate them into one collaborative Intranet platform. Thus, JRC took over the Connected project from DG CNECT

after the pilot ended in August 2016. Since then, Connected has been recognised as a corporate collaboration platform in the European Commission²⁴, while the JRC has gradually embraced the tool, performing well compared to the industry benchmarks (**61% of employees actively participating** and contributing on the platform).



Connected@JRC Key Facts and Figures

2 March 2015 - 31 March 2017 ▶ 2-Year Progress Report



²³ <https://connected.cnect.cec.eu.int/community/jrc/jrc-dg/blog/2015/03/02/welcome-to-connectedjrc>

²⁴ ABM minutes of 12 July 2016 - <https://connected.cnect.cec.eu.int/docs/DOC-95831>



In September 2016 the **Connected@Commission project** was launched, with the JRC as business owner, CNECT/DIGIT as system suppliers and SG, HR, CNECT in the core steering group. DG HR and GROW also adopted Connected as their collaboration platform, respectively in 2016 and 2017.

A total of 10 DGs are now actively involved in the project. Cross Commission processes have been successfully developed like the EC library, the European Semester Project, the AST Network, Communities of Practice, the EC Communications Network and many others.

Connected has become the host of a **one-stop-shop for knowledge** managed by the JRC, which provides a single entry point for all Commission staff to Knowledge Management places and resources, initially from JRC (Knowledge and Competence Centres, Science for Policy Reports and Briefs, JRC skills and competence finder) but with a potential to be expanded to resources from all Commission Services.

5.2 Connected European Semester

The Connected European Semester project aims to enhance collaborative working, using the 'Connected' platform, for the 27 European Semester country teams²⁵. It is part of the Commission's drive to break silos and do more with less, harnessing the collective intelligence of staff; in this context, it is an important test case in a high profile business process, with multiple DGs and politically sensitive deliverables. The Semester itself is a very significant knowledge management for policy process, where the Commission seeks to harness the most robust evidence and data to support policy recommendations to the Member States.

Since October 2016, **+/-550 Commission colleagues** involved in the European Semester have migrated their work to the collaborative platform and created over 3 000 pieces of new content. In addition to 27 country spaces, limited to country team members, more restricted 'sub-spaces' were created, limited to one person per DG for a more limited circulation of the draft country reports.

²⁵ All, with the exception of Greece which is currently under a macroeconomic adjustment programme.

User data: European Semester (all teams)**1 October 2016 – 31 May 2017**

- ▶ 3 141 pieces of new content created
- ▶ 2 375 documents
- ▶ 491 blogs
- ▶ 266 discussions
- ▶ 559 active users (viewing content)
Peak value recorded 28 October 2016
- ▶ 315 participating users (commenting, editing and creating content)
Peak value recorded 28 October 2016
- ▶ 253 contributing users (creating content)
Peak value recorded 28 October 2016

After the first full European Semester cycle the JRC conducted an in-depth evaluation of the project. All **22 SG country team leaders** gave one-to-one interviews and completed evaluation questionnaires; **199 members of the country teams** (out of +/-550 members) completed evaluation questionnaires; one-to-one interviews were carried out with 7 DG Coordinators out of 22.

The evaluation highlighted the considerable potential of collaborative working, bringing more transparency, better knowledge sharing, a one-stop-shop for information and a better institutional memory. A majority of users

surveyed thought that this will be part of daily working life in the Commission in five years' time, however many of them called for a rapid technology upgrade. Significant changes in working practices and mind-set will also be required to start reaping the full benefits of collaboration, confirming that collaborative working is also a matter of cultural change.

On the basis of this evaluation, **JRC proposed a set of 9 recommendations** to the SG in view of the next Semester cycle, to improve Connected collaboration and the Semester process overall.

Knowledge Management in Action**A Social Scoreboard for the European Pillar of Social Rights**

The 'Reflection Paper on Information Management', issued by the High-Level Reflection Group chaired by Walter Deffaa²⁶, states that 'country and region specific information is not always shared and exploited enough across the Commission'.

To improve this situation and eventually the quality of their policy outputs, Commission's services need to harvest the best available country-specific data, information and knowledge, including tacit and social knowledge internal to the organisation.

²⁶ 'Reflection paper on data, information and knowledge management at the European Commission' June 2015

Building on the experience of Connected European Semester, the JRC (in collaboration with DG COMM) launched the initiative ‘**Commission Country Knowledge on Connected**’. It consists of 28 collaborative spaces, designed to share all the country specific knowledge produced by the Commission on each MS – reports, briefings, analyses, datasets, etc.

The spaces are also used to share knowledge produced externally to the Commission – national official documents, reports and studies by think-tanks and stakeholders, etc. – of particular relevance to the Commission’s work, not only for the European semester but potentially for any policy. In time, the ambition is that these will become places where Commission staff can both share their country knowledge and crowd-source their country-related questions.

5.3 Communities of Practice

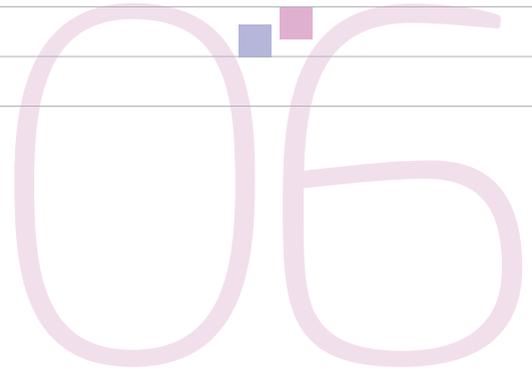
Communities of Practice (CoPs) enable practitioners in a certain field to meet virtually, share knowledge and learn from each other, ultimately building a collective knowledge capital in the respective area of work. In the JRC, they co-exist with formal organisational structures (typically the Units), allowing staff to support each other and steward knowledge across the organisation.

The JRC has been championing the establishment of CoPs, either linked with Knowledge and/or Competence Centres or simply arising from spontaneous aggregation of staff on

Connected around scientific topics such as Blockchain technologies, Food and Nutrition Security, Climate adaptation and mitigation and human & environment toxicology.

Today, the JRC has 26 Communities of practice, some of which only accessible on the Connected Platform to JRC and Commission staff, and others open (or projected to be opened) to external stakeholders. **Guidelines to set up and manage CoPs**, established by the JRC in the course of this process, are easily applicable by other Commission Services wishing to follow the example of JRC.

Publications



6.1 'Flagship' reports

The complexity of policy problems and the rapid evolution of political scenarios increasingly require **mobilizing competences and integrating information across sectors and disciplines**, to deliver 'state-of-the-art' scientific knowledge effectively helping policy makers to take informed decisions.

Responding to that challenge, the JRC takes profit of its **new organisational structure** by undertaking ad-hoc **projects built around specific policy challenges**, both current and anticipated, resourcing them as competence needs require, regardless of organisational boundaries.

A first visible output of this approach is the report **'What makes a fair society? Insights and evidence'**. It is divided into three sections: part 1 examines long and short-term trends in **income inequality**; part 2 assesses how **family background and geographical location** affect labour market outcomes, education and health. Finally, the report acknowledges that fairness is subjective, tackling the issue of **perceptions and attitudes** and drawing on behavioural sciences.

Another important project nearing finalisation is the report **'Science for the Africa-EU Partnership - Building evidence for sustainable development'**. It summarizes and presents in one publication the key findings from three decades of collaborative work between the JRC and many organisations and institutions across Africa, focusing on the African dimension of the partnership and exploring the opportunities and challenges for the continent. It will be presented at the 5th EU-Africa Summit on 29-30 November 2017 in Abidjan, Côte d'Ivoire.

In the field of Energy, the JRC has published in March two **reports on the status of wind and ocean energy technologies in 2016**, taking stock of best available information. These two reports were featured in the European Commission daily news on the 28 March.

Flagship reports are also prepared by Knowledge Centres, summarizing knowledge from inside and outside JRC, as already described in section 3.2.1 for the report **'Science for disaster risk management 2017: knowing better and losing less'**.



6.2 'Science-for-policy' briefs and internal reports

The 'Science for Policy Briefs' series consists of short, concise documents reflecting the 'state-of-the-art scientific knowledge' for a given policy issue. Initially designed as summaries of longer reports, in 2016 they were refocused in scope in order to become more instrumental for:

- ▶ Informing policy makers on the state of scientific evidence on a given policy issue, in response to a specific question, following a crisis or, proactively, in advance of important policy discussions.
- ▶ Informing decisions on important Commission dossiers, either regularly programmed in the Commission Work Programme or unexpectedly arising throughout the year.

11 briefs of this kind have been produced so far, on subjects ranging from Anti-Microbial Resistance to the influence of product and labour market regulations on R&D investors' location decisions.

The JRC also produces **internal reports** in response to ad-hoc requests. At the end of 2016, the chair of the European Commission High Level Group on maximising impact of EU R&I Programmes, Mr. Pascal Lamy, asked JRC to feed into the discussion on the future of the Framework Programme. In response to the request, a Task Force was set up in January 2017, which in one month delivered the internal report '**Fostering the European Innovation Ecosystem: Why and How**'.

For the Cabinet of Vice-President Šefčovič, the JRC produced in 2016 a report on the **Status of Research, Innovation and Competitiveness in the Energy Union** to underpin the *Communication on the acceleration of clean energy innovation*²⁸; in the Energy Union context, the Cabinet was also regularly provided with country R&I scoreboards and briefings for high-level meetings and visits.

JRC Publications – Facts & figures

- ▶ As a research organisation, the JRC also has an important output in terms of scientific reports and articles. Since 2014, it adopted an Open Access Policy, ensuring public access to its peer-reviewed research papers according to Horizon 2020 Open Access requirement.
- ▶ In 2016, the JRC has produced 360 Science-for-policy reports, 870 peer-reviewed articles and 1046 technical reports. Science-for-policy reports are those most frequently downloaded from the **JRC Publications Repository**, at a 5-years average rate of 24 233 downloads/month.

²⁸ COM(2016) 763 final

Conclusions

The growing complexity of the policy issues the Commission has to address and the explosion in the knowledge available has made effective knowledge management essential to the Commission's future success. If it cannot deploy the latest evidence to develop its policies it will not be able to make effective and convincing proposals. The Commission's ability to leverage knowledge and convene leading experts represents an important 'soft power' crucial to its success.

The recent organisational changes and its 'Strategy 2030' have set the JRC on the right course to equip the Commission with the knowledge it needs, building on the traditional strengths of the JRC as a boundary organisation with strong links in both the policy and scientific communities.

As the nature and volume of both knowledge and policy challenges continues to evolve very rapidly due to new communication and technological challenges, the JRC and the Commission needs to rapidly innovate in KM methods, tools and processes, building on the latest KM methods.

In the first year since the re-organisation, the JRC has made some encouraging steps, not only to embrace the new KM role in addition to the traditional research role but also to lead and innovate in KM practice for public policy organisations.

In particular:

- ▶ It has pioneered the launch of development of knowledge centres in key policy areas, bringing together policymakers and researchers to co-create answers to policy questions and making new sources of knowledge available to policymakers, while better aligning research with policy needs.
- ▶ In an analogous way, the Competence Centres have created unique communities focused on specific policy research tools, helping to develop lateral thinking across policy domains.
- ▶ Through the further development of the Connected platform and its use for the European Semester project, it is innovating in new collaborative working techniques in public policy organisations, tackling head-on the practical, day-to-day obstacles to silo-breaking in the Commission.
- ▶ It has taken the first steps towards the development of a new profession of knowledge brokers, working at the interface between science and policy, through the identification of key skills and first steps towards identifying the new metrics needed to guide this new profession.

The next few years will require still more innovation from the JRC to deal with the challenges that surround the use of scientific knowledge and

experts for policymaking. If it ever really existed, the traditional 'deficit' model of science being integrated into the policymaking cycle in a linear and uncontested way is now being challenged by a more polarised political 'post-fact' culture.

The use of science and expertise in policymaking has to be advocated in the face of populist opposition to experts and new ways of communicating science to the general public and engaging with their concerns will need to be developed. Similarly new methods and processes for using science in policymaking will

need to be developed that take into account the latest science of cognition and decision-making. Finally, all public knowledge bodies will need to develop rigorous ways of measuring their impact, to keep the pressure to innovate.

In this context, the JRC aims to become a global leader in the creation, management and application of knowledge for public policy, helping to address the concerns raised by the current 'post-fact' debate and leading the campaign for evidence-informed policy using the latest methods.

Annex

JRC on-line resources quoted in the report and related URL addresses

Chapter 3: Managing Knowledge

3.1 Knowledge Management Units

- ▶ Research Innovation Observatory and Policy Support Facility: <https://rio.jrc.ec.europa.eu/en/country-analysis>
- ▶ JRC Bioeconomy Observatory (Knowledge Centre): <https://biobs.jrc.ec.europa.eu>
- ▶ Digital Observatory for Protected Areas: <http://dopa.jrc.ec.europa.eu>
- ▶ Strategic Energy Technologies Information System (SETIS): <https://setis.ec.europa.eu>
- ▶ Transport Research and Innovation Monitoring and Information System: *To be launched in September 2017*
- ▶ EU Aid Explorer: <https://euaidexplorer.ec.europa.eu>
- ▶ ODIN Portal: <https://odin.jrc.ec.europa.eu>
- ▶ Clearinghouse database: <https://clearinghouse-oej.jrc.ec.europa.eu>
- ▶ STRESA Repository: <https://stresa.jrc.ec.europa.eu>
- ▶ European Human Resources Observatory for the Nuclear energy sector: <http://ehron.jrc.ec.europa.eu>
- ▶ European Radiological Data Exchange Platform: <https://eurdep.jrc.ec.europa.eu>
- ▶ European Atlas of Natural Radiation: <https://remon.jrc.ec.europa.eu/About/Atlas-of-Natural-Radiation>
- ▶ European Community Urgent Radiological Information Exchange: <https://ecurie.jrc.ec.europa.eu>
- ▶ KnowSDGs platform: <http://h05-stg-vm20.jrc.it>
- ▶ Sustainable Development Goals Website: https://ec.europa.eu/sustainable-development/about_en
- ▶ Adverse Outcome Pathway Knowledge Base: <http://aopkb.org/index.html>
- ▶ Mobile app for monitoring of Invasive Alien Species (IAS): <http://digitalearthlab.jrc.ec.europa.eu/app/invasive-alien-species-europe>

3.2 Knowledge Centres

- ▶ Disaster Risk Management Knowledge Centre (DRMKC): <http://drmkc.jrc.ec.europa.eu>
 - Disaster Risk Management projects common repository: <http://drmkc.jrc.ec.europa.eu/knowledge/Scientific-Results#project-explorer/631/projects/list>
 - European Network of Crisis Management Laboratories: <http://drmkc.jrc.ec.europa.eu/innovation/ENCML>
 - DRMKC Support System: <http://drmkc.jrc.ec.europa.eu/laboratory/SupportSystem>
- ▶ Knowledge Centre on Migration and Demography (KCMD): <https://ec.europa.eu/jrc/en/migration-and-demography>
 - Migration Data Catalogue: <https://bluehub.jrc.ec.europa.eu/catalogue>
 - Dynamic Data Hub: <https://bluehub.jrc.ec.europa.eu/migration/app/index.html>
 - Inventory of Commission activities on Migration and Demography: <https://ec.europa.eu/jrc/en/migration-and-demography/knowledge/information>
- ▶ Knowledge Centre for Territorial Policies (KCTP): <https://ec.europa.eu/jrc/en/territorial-policies>
 - Smart Specialisation Platform (S3): <http://s3platform.jrc.ec.europa.eu/home>
 - RHOMOLO: <https://ec.europa.eu/jrc/en/territorial-policies/platforms-models/RHOMOLO>
 - LUISA: <https://ec.europa.eu/jrc/en/territorial-policies/platforms-models/LUISA>
 - Urban Data Platform: <https://ec.europa.eu/jrc/en/territorial-policies/platforms-models/urban-data-platform>

- ▶ Bioeconomy Knowledge Centre (BKC): <https://biobs.jrc.ec.europa.eu>

3.3 EU policy lab

- ▶ EU Policy Lab Blog: <http://blogs.ec.europa.eu/eupolicylab>

3.4 Methodology and capacity building

- ▶ KM for Policy site on Connected (Commission internal): <https://connected.cnect.cec.eu.int/groups/knowledge-centres-and-competence-centres>
- ▶ Evidence for Policy Community of Practice: <https://ec.europa.eu/jrc/communities/community/evidence4policy>

Chapter 4: Managing Competences

4.1 Hosting, organising and sharing data

- ▶ JRC Data Catalogue: <https://data.jrc.ec.europa.eu>

4.2 Data processing and visualisation

- ▶ EMHIRES dataset: <https://ec.europa.eu/jrc/en/scientific-tool/emhires>
- ▶ JRC Earth Observation Data and Processing: <https://ec.europa.eu/jrc/en/publication/towards-jrc-earth-observation-data-and-processing-platform>
- ▶ Global Surface Water Explorer: <https://global-surface-water.appspot.com>
- ▶ Global Human Settlement Layer: <http://ghsl.jrc.ec.europa.eu>

4.3 Data processing and visualisation

- ▶ Competence Centre on Composite Indicators and Scoreboards: <https://composite-indicators.jrc.ec.europa.eu/?q=about-us>
 - Social Scoreboard Platform: <https://composite-indicators.jrc.ec.europa.eu/social-scoreboard>
 - Cultural and Creative Cities Monitor: <https://composite-indicators.jrc.ec.europa.eu/cultural-creative-cities-monitor>
- ▶ Competence Centre on Micro-economic Evaluation: <https://ec.europa.eu/jrc/en/microeconomic-evaluation>
- ▶ Competence Centre on Text Mining and Analysis: <https://ec.europa.eu/jrc/en/text-mining-and-analysis>
 - EMM Newsexplorer: <http://emm.newsexplorer.eu/NewsExplorer>
 - EMM NewsBrief: <http://emm.newsbrief.eu/NewsBrief>
 - Tool for Innovation Monitoring (TIM): <http://www.timanalytics.eu>
 - EMM Open Source Intelligence Suite: <https://wiki.emm4u.eu/confluence/display/osintpublic/EMM+Open+Source+Intelligence+Suite>
 - TIM Energy: http://139.191.245.15/tim_energy.html
- ▶ Competence Centre on Modelling: *To be launched 26 October 2017*
 - Modelling Inventory Database & Access Services: <http://midas.jrc.it/discovery/midas>

Chapter 5: Collaborative Working

5.3 Commission Country Knowledge on Connected

- ▶ Commission Country Knowledge spaces (Commission internal): <https://connected.cnect.cec.eu.int/community/connected-country-knowledge>

5.4 Communities of Practice

- ▶ Guidelines to set up and manage CoPs (Commission Internal): <https://connected.cnect.cec.eu.int/docs/DOC-106201>

Chapter 6: Publications

- ▶ JRC Publications Repository: <http://publications.jrc.ec.europa.eu/repository>

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