European Commission

Management Plan 2017

JOINT RESEARCH CENTRE (JRC)

Contents

INTRODUCTION

The Presidents' State of the Union address has outlined that the Commission faces ever more complex and inter-connected policy challenges. To tackle these challenges the Commission has become more focused and has prioritised its activities around eleven General Objectives (GOs). The JRC supports ten of them, four of which are described in the JRC Strategic Plan 2016-2020 (SP), while the present Management Plan (MP) provides their outputs in 2017 as well as their related policy initiatives and objectives. The JRC's outputs implementing the SP are contained in the rolling bi-annual JRC Work Programme as well as in the more succinct Key Orientations (KO) document, which has been developed in consultation with Commission services and in particular partner DGs. The KOs are subject to a Commission decision and they represent the core of the present MP.

The Commission is also enhancing its effectiveness and efficiency and is working in a more integrated way. At the same time, we experience a surge of data, information and knowledge. This is a huge opportunity but it also creates challenges for society and institutions. The Commission's corporate Data, Information and Knowledge Management strategy (SWD(2016) 333 final, and C(2016) 6626 final) lists a number of actions to cope with this challenge. The JRC provides support to several elements of this strategy, e.g. pilot projects to enhance knowledge sharing in key policy areas, such as the European Semester; increased use of collaborative tools; competence and knowledge centres; the infrastructure to support a big data capability; staff training and development policies focused on knowledge sharing and collaborative working, as described in the following paragraphs.

To provide the best possible support to this changing context, the JRC has to evolve as well. In 2016, the JRC launched a new strategy for its development in the next 15 years and has gone through a major reorganisation exercise. The proactive strategy takes a long term perspective, covering the period up to 2030 and the reorganisation provides the necessary underpinning structural changes. The focus for 2017 is the implementation of change and fine-tuning.
The main points of these changes and their implementation are described in the JRC Management Plan 2017 as follows:

1. The JRC will be more flexible and responsive and will help to break down silos: It will base its work around ten inter-linked groups of policies called priority nexus. The aim is to create connections between different areas and to encourage cross-silo thinking and multi-disciplinary approaches. New projects will be gauged against three broad dimensions: competitiveness, fairness and resilience. This new approach strengthens the JRC's capacity to anticipate and to respond rapidly in times of crisis, as well as to further exploit the tools it has already developed such as horizon scanning, foresight or technology watch. These principles are embodied in the Key Orientations (KOs) for the JRC Multi-Annual Work Programme 2017-2018, which have been prepared in consultation with Commission partner DGs (see Specific Objectives (SO) 1.1-1.9, 3.1-3.3, 4.1-4.2 and 9.1-9.2, as well as more generally Annex 3).

2. A more strategic and 100% policy relevant JRC: The JRC becomes an increasingly strategic partner for policy making DGs and is now closer to the political heart of the Commission. The JRC will focus to continue on political priorities, which often means working with many different parts of the Commission at the same time. This will ensure that the different policy perspectives are taken into account already at the design phase of JRC projects. The JRC's alignment to the political priorities and its close links to all relevant policy DGs is reflected in the structure and content of the Key Orientations (KOs) for the JRC Multi-Annual Work Programme 2017-2018. The JRC supports ten out of eleven General Objectives of the Commission, four of which have been selected as priorities for the JRC Strategic Plan 2016-2020 and hence for the present JRC Management Plan 2017.
In order to ensure that the different policy perspectives are taken into account, in 2017, the JRC will screen project proposals rigorously for their potential policy impacts and their scientific quality using the annual internal evaluation 'ex-ante assessment exercise' (see SO 10, Part1).
The JRC's relationship with policy DGs will continue to be iterative and collaborative, ensuring that its work stays relevant (see SO 10 in Part 1).

3. The JRC will manage knowledge as well as producing it: the JRC will complement its research work by 'managing' knowledge from other sources. This means, inter alia, collating and analysing knowledge and communicating it to policy makers in a timely, systematic and digestible manner. It will also make widely available its horizontal competences which could be relevant for several policies.
The JRC hosts specific Knowledge Centres (KCs), and plans to expand their scope in 2017. These are virtual entities, bringing together experts and knowledge from different locations inside and outside the Commission. Their objective is to inform policy makers in a transparent, tailored and independent manner, about the status and findings of the latest scientific evidence. For a selection of the Knowledge Centres' tasks, activities and outputs throughout 2017, see e.g. SO 1.6.a (and Annex7/1.6.a) regarding the KC on Territorial Policies; SO 9.1.1.a (and Annex 3/9.1.1.a) regarding the KC on Disaster and Risk Management; and Annex 3/8.1.f regarding the KC for Migration and Demography.
In addition to Knowledge Centres, which are structured around policy challenges, the JRC creates and operates Competence Centres (CC), centred on analytical tools which can be applied in any policy area. These Centres bring together, in one place, all in-house expertise in the use of these tools.
CCs offer a number of services. For example, they can a) advise a policy DG on the choice of the most appropriate tools; b) can work with the policy DG to apply the tools to the policy problem at hand, c) can provide training courses in the use of the tools for policy making; d) can develop new tools; and e) can help to benchmark and validate tools used across the Commission, to improve their comparability and robustness. For a selection of the Competence Centres' tasks, activities and outputs throughout 2017, see for example Annex 3/10.1.a regarding the future CC on Modelling; Annex 3/10.1.b regarding the CC on Micro-economic evaluation; Annex 3/10.1.c regarding the CC on Composite indicators and scoreboards; and Annex 3/10.2.a regarding the CC on text mining.
The Knowledge Centres and Competence Centres are amongst the most visible changes of the recent reorganisation.
The JRC must also respond to the growing demand for country-based knowledge, in view of the progressive strengthening of the European Semester. Hence, all

knowledge produced or managed by the JRC will be tagged in such a way that it can be easily retrieved, both thematically and geographically (at national or at sub-national level). (See Specific Objective 10 'Outputs related to Knowledge Management').

4. The JRC will become more efficient: The JRC takes full account of the efficiencies and synergies review, in particular the modernisation of the human resources function in the Commission. It will continually map competences and identify competence gaps (see e.g. 'Competence development & management of talents' in Part 2/A.Human Resource Management. A recruitment strategy will be developed to a) fill competence gaps, b) to give staff opportunities to develop their skills and competences, and c) to create a stimulating environment for staff. The JRC values diversity and respects individuals for their diverse backgrounds, experiences, styles, approaches and ideas.
The JRC will recruit managers with a rounded experience of policy and science. All managers will be required to follow leadership development programmes to continue building up their skills enabling them to manage increasingly complex issues and to lead their teams openly and progressively.

PART 1. MAIN OUTPUTS FOR THE YEAR

The tables below present the key orientations (KOs) of the JRC Work Programme (WP) for 2017-2018. The detailed JRC Work Programme lists several dozens of planned deliverables corresponding to the key orientations presented hereafter for each of the specific objectives related to the general objectives (GOs) 1, 3, 4 and 9. Moreover, and as explained in the JRC Strategic Plan 2016-2020, the JRC provides a) policy support to the other GOs as well, and b) it provides also support cutting across all GOs (see policy area 11 "A stronger knowledge management capacity" of the JRC Multi-annual Work programme (MAWP) in Annex 3). The complete set of key orientations is presented in Annex 3.
The complete list of planned deliverables corresponding to the key orientations, with all details, can be found in the JRC Project Browser (JPB) at the following link: http://apps.jrc.cec.eu.int/jpbma
The target values for policy related outputs presented below by general objective / specific objective are based on the number of planned policy deliverables from the Multi-annual Work programme (MAWP) of the JRC currently available in JPB.

For improved legibility, the main activities planned by the JRC in 2017 are described in short narratives below, preceding each performance table of the four selected Commission General Objective (CGO).

General objective 1 "A New Boost for Jobs, Growth and Investment"

In order to facilitate place-based policy development and investments, the JRC and DG REGIO have set up a Knowledge Centre for Territorial Policies. The JRC's territorial intelligence and the use of analytical models underpin the development, implementation and assessment of cohesion policy. It will also support the implementation of sustainable urban actions, including the Covenant of Mayors for Climate and Energy.
The JRC will continue to develop its smart specialisation (S3) Platform to help regions make smarter and more targeted use of the European Structural and Investment Funds (ESIFs). The S3 Platform provides advice to EU countries and regions for the design and implementation of their Smart Specialisation Strategy. A new monitoring function will allow analysis as to whether funds have been allocated on the basis of smart specialisation strategies, and assessment of the concrete results. Smart specialisation will be expanded to other key EU policy programmes and initiatives, in particular energy policy, higher education, research circular economy and the digitisation of industry.
JRC will provide socioeconomic analysis on skills and determinants of employability, and the changing nature of work, and contribute to the assessment of policy programmes designed to help people into work.
The Research and Innovation Observatory will continue to monitor and analyse research and innovation (R&I) developments in Member States and provide input into the European Semester. This work will be complemented by macro-economic simulations assessing the impact of R&I policy reforms on economic growth and employment in selected countries.

Relevant general objective 1: A New Boost for Jobs, Growth and Investment	
Specific objectives 1.1 to 1.9 (contributing to H2020 Specific Objective 17): **A well-informed European policy-making, appropriately and timely supported by the JRC through the provision of high quality and innovative scientific and technical studies, tools, data, materials, models and standards, in the following areas:** **(Specific objective 1.1) Agriculture and Rural Development** **(Specific objective 1.2) Education, Culture, Youth and Sport** **(Specific objective 1.3) Environment** **(Specific objective 1.4) Maritime Affairs and Fisheries** **(Specific objective 1.5) Health and Food Safety** **(Specific objective 1.6) Regional Policy** **(Specific objective 1.7) Research, Science and Innovation** **(Specific objective 1.8) Transport** **(Specific objective 1.9) Employment, social affairs, skills and labour mobility**	Related to spending programme: H2020
Main outputs in 2017:	

Key orientations (KOs) of the JRC Work Programme (WP) for 2017-2018

Description	Indicator	Target
JRC Key Orientations in the area of "Agriculture and Rural Development": 1.1.a) CAP implementation - develop efficient and innovative tools to implement agricultural legislation; 1.1.b) Environmental needs - develop methods and tools for the integrated assessment of agriculture, rural development and the economic impact of taking into account the environment at farm and regional level (so that CAP instruments can be tailored to environmental needs); 1.1.c) Resource efficiency and climate change - model soil, water and ecosystem dynamics in order to improve their sustainable management in agricultural systems, and make a better use of the potential of bioeconomy. Study the effects of climate change on the agricultural sector, assess the potential of climate change mitigation and adaptation strategies; 1.1.d) Agricultural market, trade and food security - carry out economic analysis of the competitiveness and trade relations of the European agri-food sector), the performance of European agri-food	Policy related outputs	Throughout 2017 Target value: 67

systems (including the food chain) and their linkages to jobs and growth as well as contribution to European and global food security.		
JRC Key Orientations in the area of "Education, Culture, Youth and Sport": 1.2.a) Education and training systems - monitor trends under EU policy strategies (e.g. Europe 2020 and ET2020) and provide evidence of the successful implementation and development of such policy frameworks; 1.2.b) Innovative education - carry out research on policy relevant themes such as efficiency and equity in education investment, role of (higher) education for regional development and smart specialisation, education and societal wellbeing, integrating vulnerable groups such as migrants, refugees and other minorities into the education system, and early childhood learning; study the impact of digitisation on education and training practices and systems; 1.2.c) Cultural and creative sectors - develop evaluation tools to measure and monitor cultural activities and creativity at city level to assess the impact of specific culture-oriented initiatives on economic and social development (see also section 11.1.c).	Policy related outputs	Throughout 2017 Target value: 22
JRC Key Orientations in the area of "Environment": 1.3.1 Protecting and enhancing our natural capital 1.3.1.a) The freshwater and marine environment - assess water resources and water use efficiency, floods and droughts (linked to key orientation 9.1.1.a); provide hydro-economic modelling and assessment of implementation scenarios for the Water Framework Directive and related directives; provide integrated analyses of water allocation across economic sectors for Europe and other regions of the world (water-energy-food ecosystems); develop methods for the monitoring and assessment of chemical, biological and	Policy related outputs	Throughout 2017 Target value: 180

ecological water quality. Develop standards and reference materials for pollutants for fresh and marine waters, setting consistent and comparable nutrient boundaries across Europe; develop minimum quality requirements for water reuse (also contributing to the circular economy – see section 1.3.2.a); develop the knowledge base, including the modelling framework on oceans and coastal environments, in particular for the Marine Strategy Framework Directive. Continue the research work on mapping and assessing ecosystem services delivered by freshwater and marine ecosystems that can be of interest for the EU Biodiversity Strategy. Support the development of a holistic approach to assessing and managing the risks from the simultaneous presence of multiple chemicals (mixtures) in the aquatic environment, in particular gathering, assessing and developing the scientific and technical knowledge on effect-based tools and on identifying problematic substances in mixtures; 1.3.1.b) Biodiversity, forests and soils - support the implementation of the EU biodiversity strategy, notably by assessing ecosystem services and natural capital accounting in the context of the environmental knowledge community, the green infrastructure, the invasive alien species information system, global biodiversity monitoring and the sustainable supply and demand of biomass for all uses. Analyse and model forest resources and develop information systems on forests and forest fires in support of the EU forest strategy. Support the EU Soil Thematic Strategy by modelling soil functions and developing the European Soil Data Centre (ESDAC); monitor and model land and soil degradation and desertification; and participate in networks such as the Global Soil Partnership. 1.3.2 A circular, green and competitive low carbon economy 1.3.2.a) Sustainable consumption and production and the circular economy -		

elaborate criteria and measures for the implementation of product policy and facilitate information exchange on best practice. Determine best available techniques and develop indicators for waste management, and assess how to optimise energy recovery from waste in line with the EU waste hierarchy. Support the management of the EU raw materials knowledge base (see also KO 4.1.a) and develop quality criteria for secondary raw materials. Support the eco-innovation action plan, in particular the environmental technology verification programme. Develop life-cycle methodologies, data and analyses for sustainable consumption and production and other circular economy related policy actions, including the assessment of the product-waste interface (i.a. reparability, durability, and recyclability), and the environmental footprint of products and organisations. Assess environmental and industrial policies. 1.3.2.b) Environmental knowledge, information and indicators - develop environmental indicators and lifecycle based methods for incorporating environmental considerations into other policies, e.g. via the better regulation toolbox, and for the roadmap to a resource-efficient Europe. Contribute to the Environment Knowledge Community (EKC) as a better way to generate, plan and share environmental knowledge, including through the EKC Knowledge Innovation Projects (KIPs). Implement the infrastructure for spatial information in the European Community (INSPIRE) and the shared environmental information system. 1.3.3 Protection from environment-related risks to human health and wellbeing 1.3.3. a) Chemicals and nanomaterials - support the implementation of the chemicals' legislations and policy development in cross-cutting areas. Set up a toxicology knowledge base and further develop and maintain the Information Platform for Chemical/Nanomaterial		

Monitoring IpCheM, including the nanomaterial repository, especially in view of supporting the European Human Biomonitoring Initiative (HBM4EU). Support mutual acceptance of chemicals and nanomaterial data at international (e.g. OECD) level; develop and promote alternatives to animal testing; develop methodologies, standards and reference materials for nanomaterials (also see key orientation 4.1); 1.3.3.b) Air quality, pollutant emissions and industrial accident prevention - monitor and model ambient air quality and emissions (for vehicle emissions see also key orientation 4.1.a); carry out integrated impact assessments of air quality and climate policies and provide tools to facilitate air quality management at national, regional and local level; support the implementation of EU air quality policies through harmonisation and standardisation programmes, the improvement and the validation of innovative methods; determine best available techniques for implementing the Industrial Emissions Directive; develop information systems on, and carry out analyses of, industrial accidents.		
JRC Key Orientations in the area of "Maritime Affairs and Fisheries": 1.4.a) CFP (Common Fisheries Policy) implementation - develop and apply biological, economic, social, spatial and genetic/genomic approaches to sustainable and competitive aquaculture and fisheries, in the EU and worldwide; 1.4.b) Maritime spatial planning and coastal management - develop and collate knowledge for maritime spatial planning and coastal management, and the relevant knowledge management tools (EU 'atlas of the seas' and Marine Competence Centre); 1.4.c) Maritime security - improve EU maritime surveillance systems, enhance their interoperability and provide support to implement selected actions under the EU Maritime Security.	Policy related outputs	Throughout 2017 Target value: 25

JRC Key Orientations in the area of "Health and Food Safety": 1.5.1 Health 1.5.1.a) Healthcare and health information - the standardisation, harmonisation and improvement of healthcare and health information in the EU, with an initial focus on cancer and rare diseases; this includes the coordination/development of European health registries, the launch of an innovative and comprehensive quality assured healthcare pathway (starting with breast cancer, followed by colorectal cancer), monitoring cross-border health threats and reference systems for health measurements; 1.5.1.b) Promotion of a healthier society - action in the field of physical activity, nutrition, alcohol and tobacco in the framework of chronic disease prevention; 1.5.1.c) Support for nano-related policies, health technology assessment - chemical monitoring data and implementation of endocrine disruptors criteria; dissemination of novel toxicity approaches. 1.5.2 Food safety 1.5.2.a) Food and feed safety - management of six EU reference laboratories, including the development of harmonised/validated methods and new analytical tools in the area of food and feed safety control and the pre marketing authorisation of GMOs and feed additives; 1.5.2.b) Food and feed fraud - assistance in the fight against food fraud; production of certified reference materials for food and feed analysis; 1.5.2.c) Plant health - protection of plant health by early detection and plant health monitoring initiatives; support for the establishment of a priority list of plant pests in the Union.	Policy related outputs	Throughout 2017 Target value: 102
JRC Key Orientations in the area of "Regional Policy": 1.6.a) Territorial modelling for impact assessment of policies and investments - develop an integrated modelling capacity to	Policy related outputs	Throughout 2017 Target value: 62

better assess the impact of investments and policies in regions, cities and macro-regions, including demographic trends, and climate change impacts; 1.6.b) Economic, social and environmental cohesion and development - develop indices and quantitative analyses at urban, regional and macro regional levels; 1.6.c) Support for macro-regional and smart specialisation strategies - integrated processes and qualitative methods to support the development, implementation and monitoring of smart specialisation strategies and capacity building at national, regional, urban and macro-regional levels.		
JRC Key Orientations in the area of "Research, Science and Innovation": 1.7.a) Research and innovation policies – model, monitor and analyse the drivers of, and barriers to research and innovation, including the effectiveness of policy instruments related to research and innovation at EU, national, regional and (cross)-sectorial levels. Research and Innovation Observatory for the collection, production and dissemination of data and analysis related to national research and innovation policies. Indicators, scoreboards, information systems and web platforms for monitoring and analysing the implementation of EU research and innovation policies. Foresight support and horizon scanning for the identification of research and innovation priorities; 1.7.b) Fuel cells and hydrogen technologies – support under the Fuel Cells and Hydrogen Joint Undertaking, typically in cross-cutting areas, such as safety regulations, codes and standards; 1.7.c) Low carbon energy observatory – provide data, analysis and intelligence on the state of the art of different energy supply technologies, their industrial development, market barriers and global competition; 1.7.d) Bioeconomy - develop a Knowledge Centre providing data collection, analysis, dissemination and modelling on the bioeconomy, and the assessment of food	Policy related outputs	Throughout 2017 Target value: 57

and nutrition security. On an ongoing basis, provide data and analysis on sustainable biomass supply and demand at EU and global scale, covering all uses of biomass, to provide a basis for coherent policies on the bioeconomy, including relevant agriculture, food, environment, energy and industry policies. JRC work on the bioeconomy will be closely interconnected with work described in chapters 1.1 (agriculture and rural development), 1.3 (environment), 1.5 (health and food safety), 3.1 (climate action) and 3.2 (energy).		
JRC Key Orientations in the area of "Transport": 1.8.a) Transport innovation - support the strategic transport innovation agenda and develop the transport innovation and monitoring information system (TRIMIS); 1.8.b) Alternative fuels - carry out pre-normative testing and contribute to the development of standards supporting the implementation of the alternative fuels infrastructure in the framework of the Alternative Fuels Infrastructures Directive (AFI); assessment of the relevant national AFI policy frameworks; and modelling of and support for electro-mobility standardisation; 1.8.c) Transport policy analysis - socioeconomic analyses of the transport sector, using transport models, quantitative methodologies, data, scenarios and technology watch; congestion indicators; and harmonise transport data with spatial and environmental information; 1.8.d) Intelligent transport systems and electronic tools - technical support for the implementation of the 'digital tachograph', in particular the preparation of new technical specifications; support for the development of cooperative intelligent transport systems; development of electronic tools in support of quality inland water transport across Europe; 1.8.e) Safety and security - develop tools and databases on EU-wide multimodal accidents and incidents, and data	Policy related outputs	Throughout 2017 Target value: 40

visualisation and exploration tools for transport safety analysis, including for aviation safety; and carry out performance testing and analysis of aviation security technologies.		
JRC Key Orientations in the area of "Employment, social affairs, skills and labour mobility": 1.9.a) Employment and social policy - provide high quality monitoring, benchmarking, impact assessment and evaluation support for employment and social policy related measures, notably through three competence centres referred to in section 11.1; 1.9.b) European pillar of social rights - support the establishment of a European pillar of social rights and the updating of the social acquis through analysis of the changing nature of work and welfare systems, collaborative economy and health and safety at work; 1.9.c) Skills and employment - provide analysis of the distribution and evolution of skills and their links with employment potential.	Policy related outputs	Throughout 2017 Target value: 28

General objective 3 "A resilient European Energy Union with a forward-looking climate change policy"

Through scientific evidence and technical work, the JRC will support the implementation of existing, and the development of new policy initiatives under the five dimensions of the Energy Union: (i) decarbonisation of the economy and reduction of Greenhouse Gas (GHG) emissions, (ii) increasing the security of energy supply, (iii) improving energy efficiency, (iv) integrating the internal energy market, (v) promoting research, innovation and competitiveness.

The JRC's support will cover inter alia the development and validation of accounting methodologies for Greenhouse Gas (GHG) emissions in the framework of international climate change commitments, the contribution to decarbonisation of the economy through pre-standardisation work on selected energy technologies and the assessment of national plans and reports on energy efficiency and renewables.

The JRC will also provide support to the governance of the Energy Union. Furthermore, the JRC will improve the availability of data and analyses on specific topics, such as alternative fuels, resource and energy efficiency, low carbon energy technologies, and biomass supply and demand. In the area of energy infrastructures, a robust methodology will be developed and validated for the assessment of infrastructure projects including the resilience to the impacts of climate change and the suitability in the face of different future climatic conditions.

In the area of modelling, work includes further development and deployment of the JRC energy-economy modelling toolbox. In line with the EU's objectives, the JRC is also enhancing its work to improve the resilience of EU infrastructures and society against the effects of climate change.
The JRC will continue to provide technical and scientific support for developing, implementing and monitoring EU policies on nuclear safety, security and radiation protection (including education, training and information), taking account of related EU strategies (e.g. the Energy Security Strategy). It will also continue to support the development and consolidation of various European Technology Platforms, including the Sustainable Nuclear Energy Technology Platform (SNE-TP), the Implementing Geological Disposal of Radioactive Waste Technology Platform (IGD-TP) and the European Nuclear Energy Forum.

Relevant general objective 3: A Resilient Energy Union with a Forward-Looking Climate Change Policy	
Specific objectives 3.1 to 3.3 (contributing to H2020 Specific Objective 17 and to EURATOM Research & Training Programme Specific Objectives 9, 10, 11, 12 and 13): **A well-informed European policy-making, appropriately and timely supported by the JRC through the provision of high quality and innovative scientific and technical studies, tools, data, materials, models and standards, in the following areas:** **(Specific objective 3.1) Climate Action** **(Specific objective 3.2) Energy** **(Specific objective 3.3) Safe, secure and sustainable use of the nuclear energy**	Related to spending programmes: H2020 and Euratom
Main outputs in 2017:	

Key orientations (KOs) of the JRC Work Programme (WP) for 2017-2018		
Description	Indicator	Target
JRC Key Orientations in the area of "Climate Action": 3.1.1 Mitigation 3.1.1.a) Economic and climate modelling/assessments - design and implement domestic and international climate policies and strategies to keep global warming well below 2° C; further develop in-house capacity to carry out such assessments; 3.1.1.b) GHG emissions from agriculture and LULUCF - monitor, report and verify energy-related, agricultural and forestry emissions to meet legal obligations at EU and international level; modelling and other analyses on how to integrate the assessment of these emissions into EU and	Policy related outputs	Throughout 2017 Target value: 55

international legislation; GHG emissions and mitigation options in agriculture; compiling global emissions inventories; 3.1.1.c) Vehicle emissions - technical support for implementing and developing policy measures to decarbonise the transport sector; specifically, analysing the real world fuel consumption and CO2 emissions of light- and heavy-duty road vehicles awarding; support the assessment of eco-innovation CO2 savings and derogations for small-volume manufacturers of cars and vans and assess smart mobility technology innovation scenarios; 3.1.1.d) Alternative fuels for transport - assess the environmental sustainability, technological development and costs of bioenergy and biofuels and of associated GHG emissions savings, including 'well-to-wheel' analyses and support for alternative fuels legislation; 3.1.1.e) Support the operations of climate innovation funds - technical support for the knowledge sharing facility of the NER 300 funding programme, management of NER 300-related communication activities as well as provision of support for the design and implementation of its successor, the Innovation Fund. 3.1.2 Increasing resilience to climate change 3.1.2.a) Assess climate change impacts (economic and non-economic), vulnerability, resilience, and adaptation options in the EU and globally to support the review and update of the EU adaptation strategy and to meet the objectives of the Sendai framework for Disaster risk reduction (DRR) and the Sustainable Development Goals. In conjunction with the Knowledge Management Centres on DRR, on Migration, and on Territorial planning, respectively assess impacts of weather extremes, study the links between climate change and displacement/migration, and urban resilience (including support to the adaptation activities under the Covenant of		

Mayors for Climate and Energy, further covered under Key Orientation 3.2.d). 3.1.3 Climate science and observations 3.1.3.a) Advance our understanding of how climate change interacts with other parts of the Earth's system (e.g. ice and forests) and translate the findings into policy guidelines.		
JRC Key Orientations in the area of "Energy": 3.2.a) Energy-climate-economy modelling – develop, validate, and run models for climate-energy-economy system, including development and maintenance of necessary databases or of other available energy models to the Commission; carry out relevant techno-economic analysis, in particular mapping latest evidence on techno-economic costs for energy supply and demand technologies; provide support for impact assessments and carry out energy modelling at national, regional and European level and analysis of the results; develop the capacity to contribute to the design of future energy-climate reference scenarios and make available to European stakeholders the tools to use or develop energy system modelling; 3.2.b) Energy security – carry out security, safety, risk and techno-economic assessments of the EU's energy supply from conventional and unconventional resources (oil, natural gas); integrate resilience to the adverse impacts of climate change. This work includes security of supply, transmission and distribution of gas and of electricity, as well as the safety of offshore oil and gas operations, including tools for accident reporting and capacity building measures. Analyse privacy and cybersecurity in the energy sector; 3.2.c) Internal energy market – assess the development of energy infrastructure and energy markets in the EU, including design of the retail market, new deal for energy consumers and protection of vulnerable consumers, integration of LNG and gas storage, super power grids, smart power grids (including interoperability and smart-	Policy related outputs	Throughout 2017 Target value: 148

metering), flexibility requirements and gas networks, and the new market design initiative; support measures for digitisation of energy markets; develop methodologies for the economic valuation of energy security in the evaluation of energy infrastructure projects, including Projects of Common Interest (PCI); provide background data and analysis which can support the preparation of future energy prices and costs reports; 3.2.d) Energy efficiency – support the implementation of the EU legislation in areas of renewable energy and energy efficiency, including on the efficient heating & cooling; provide technical support for the development of the legislative framework for the time period after 2020; analyse the development and deployment of energy efficiency technologies; assess technology innovation in energy-intensive industries; support the Covenant of Mayors for Climate and Energy in the EU and beyond, including the assessment of plans on energy efficiency, renewables, emissions reduction, climate adaptation and access to energy; perform modelling and cost-benefit analyses; support through analytic tools, modelling and/or assessment the implementation of the Energy Union Governance Regulation, which requires from the Member States the preparation of national integrated energy and climate plans; 3.2.e) Low carbon energy technologies – carry out techno-economic assessments of renewable energy technologies and their cost-effective deployment, including by using geo-spatial tools and by analysis of relevant renewable energy scenarios and support of the implementation of the revised directive; perform pre-standardisation work on photovoltaic and other renewable energy technologies; prepare a web-based CO2 Storage Atlas for publication and further updating; 3.2.f) Energy Research, Innovation & Competitiveness (RIC) – Support the implementation of the Research and Innovation and Competitiveness (RIC)		

dimension of the Energy Union, through the management of relevant knowledge and available scientific data; support the integrated SET Plan through a strengthened information system (SETIS) and the ACEI (Accelerating Clean Energy Innovation) strategy. Develop indicators that monitor the progress of energy technology innovation as an input to the annual State of the Energy Union report. Support the development of indicators and intelligence through relevant techno-economic analysis and energy systems modelling.		
JRC Key Orientations in the area of "3.3 Safe, secure and sustainable use of the nuclear energy": 3.3.1 Safety of nuclear reactors and nuclear fuels 3.3.1.a) Collection, analysis, and assessment of nuclear power plants' operational experience worldwide, and dissemination of information to the Member States' regulatory authorities; 3.3.1.b) Research on structural materials for analysis and modelling of ageing of components and structures with a view to improving residual lifetime assessment techniques; 3.3.1.c) Improvement of the safety assessments of innovative reactor designs in synergy with the Generation IV International Forum (GIF); 3.3.1.d) Generation of reference samples and scientific data on the safety performance and development of codes and modelling for safety assessment of both conventional and innovative nuclear fuels in operational, transient and accident conditions; 3.3.1.e) Support the EU's internal policy on nuclear safety by providing technical and scientific assistance for the implementation of the EU Nuclear Safety, Nuclear Waste and Spent Fuel and Basic Safety Standards Directives and related EU policy. 3.3.2 Safety of spent fuel, radioactive	Policy related outputs	Throughout 2017 Target value: 291

waste management and nuclear decommissioning 3.3.2.a) Development of techniques for spent fuel and nuclear waste characterisation and study of the physico-chemical mechanisms relating to the long-term storage of spent fuel and disposal of nuclear waste; 3.3.2.b) Studies for the reduction of the radiological toxicity of wastes through advanced separation and transmutation and for the safety assessment of recycling technologies. Determination of scientific data and preparation of reference samples of spent fuel; 3.3.2.c) Development and assessment of innovative technologies and techniques applied to nuclear decommissioning. Exchange and dissemination of knowledge developed, findings and information. 3.3.3 Nuclear emergency preparedness and response (EP&R), environmental monitoring and radiation protection 3.3.3.a) Support for Member States an Commission services on the exchange of information in case of emergency and on radiological monitoring and measurements relating to radioactivity in the environment, including hosting, maintaining and developing the related database and reporting system; 3.3.3.b) Development of severe accident modelling, radiological source term evaluation, accident management of nuclear power plants and enhancement of preparedness for nuclear or radiological incidents through benchmarking of dispersion models. 3.3.4 Nuclear safeguards 3.3.4.a) Technical and scientific development of destructive and non-destructive methods and techniques (verification and informatics systems, analytical services, training, special equipment, etc.) and of standards and reference materials to support the Euratom safeguards system. Operation of the		

Safeguards on-site laboratories and in-field support for Euratom inspections; 3.3.4.b) Development of containment and surveillance techniques in the nuclear fuel cycle process, from enrichment facilities to geological final disposal. 3.3.5 Promote excellence in the nuclear science base for standardisation 3.3.5.a) Understanding the fundamental properties and behaviour of innovative nuclear and structural materials for safety assessment and model validation; 3.3.5.b) Support for the standardisation and harmonisation of radiological measurement methods in the EU and collaboration with key partner countries and international organisations (IAEA, OECD-NEA) in the field. 3.3.6 Knowledge management, training and education 3.3.6.a) Monitoring EU trends in human resources in the nuclear energy field and facilitating the mobility of human resources in the sector throughout the EU. Developing tools for knowledge management and for transparency and dissemination of information; 3.3.6.b) Preserving, aggregating and disseminating specific scientific and technical knowledge related to nuclear safety, safeguards and security by providing operational support and training and by increasing access to the JRC nuclear laboratories for researchers from Member States and international organisations. 3.3.7 Nuclear science applications and use of radioisotopes 3.3.7.a) Development of techniques for medical radiotherapy and radio-diagnosis; contribution to a resilient and sustainable supply of medical radioisotopes in the EU; development of industrial and space applications.		

General objective 4 "A deeper and fairer internal market with a strengthened industrial base"

The JRC's extensive expertise in standardisation will continue to support the internal market. It will also use its in-depth knowledge of Europe's industrial landscape to contribute to regulatory fitness checks for various industrial sectors and a framework for measuring European competitiveness across Member States and industries. It will provide support to the circular economy package, notably on raw materials and bioeconomy, and on medical devices.

The JRC also continues to contribute to the development and implementation of Global Satellite Navigation Programme (Galileo), the European Geostationary Navigation Overlay Service (EGNOS), the Earth Observation component of the EU Space Strategy and to the improvement of the interoperability and quality of Copernicus data, including with other sources of data, to maximise the societal and socio-economic benefits of Earth Observation.

Services and products of the Copernicus programme contribute to Common Agriculture Policy implementation, marine-environment monitoring, atmosphere-monitoring, green-house gas emissions monitoring and other climate change-related information, indices and quantitative analyses of economic, social and environmental cohesion and development, maritime security, addressing illegal immigration and trafficking in human beings, disaster resilience, emergency and crisis management and international cooperation and development.

The JRC supports the development and implementation of European emission standards and test procedures for light- and heavy duty road vehicles. It also supports the development of globally harmonised test procedures for electric and hybrid vehicles, and standards for interoperability.

Relevant general objective 4: A Deeper and Fairer Internal Market with a Strengthened Industrial Base		
Specific objectives 4.1 to 4.2 (contributing to H2020 Specific Objective 17): **A well-informed European policy-making, appropriately and timely supported by the JRC through the provision of high quality and innovative scientific and technical studies, tools, data, materials, models and standards, in the following areas:** **(Specific objective 4.1) Internal Market, Industry, Entrepreneurship and SMEs** **(Specific objective 4.2) Customs policy and the fight against fraud**		Related to spending programme: H2020
Main outputs in 2017:		
Key orientations (KOs) of the JRC Work Programme (WP) for 2017-2018		
Description	Indicator	Target
JRC Key Orientations in the area of "Internal Market, Industry, Entrepreneurship and SMEs": 4.1.a) Strengthening industry in the single market - industrial policy	Policy related outputs	Throughout 2017 Target value: 196

development, notably to support standardisation, reference measurements and (nano)materials; support for industrial sectors to enhance their environmental efficiency, energy performance, resilience to climate change, and achieve reductions in the intensity of GHG emissions, including vehicle emission test procedures and assessment of innovative technologies; material efficiency and circular economy; advanced manufacturing and key enabling technologies; SMEs and innovative companies, industrial competitiveness; 4.1.b) Space strategy - support for Galileo and the EGNOS, including signal, receivers and technical support for policy development and the management of R&D assets and resulting IPR; technical support for applications, implementation and further development of services, including Galileo PRS and security, spatial information analysis and data dissemination tools for Copernicus and EU contributions to civil and international space dialogues. Services and products of the Copernicus programme also contribute to CAP implementation (KO 1.1.a), marine-environment monitoring (KO 1.3.1a), atmosphere-monitoring (KO 1.3.3.b), green-house gas emissions monitoring (KO 3.1.1.b) and other climate change-related information (KO 3.1.3.a), indices and quantitative analyses of economic, social and environmental cohesion and development (KO 1.6.b), maritime security (KO 1.4.c), addressing illegal immigration and trafficking in human beings (KO 8.1.a), disaster resilience, emergency and crisis management (KO 9.1.1.a) and international cooperation and development (KOs 9.2.2.a and 9.2.3.b). 4.1.c) Medical devices and cosmetics - support to the implementation and management of the revised medical devices and in vitro diagnostic medical devices regulatory framework through scientific, technical and related logistic means; support to the cosmetics regulatory framework including through promotion of alternative methodologies to animal		

testing. 4.1.d) Raw materials - support the implementation of actions and EU policies and monitor the progress of the implementation plan for the European Innovation Partnership on Raw Materials. Monitor the primary and secondary raw materials global and European markets and support the management of the EU Knowledge Base on Raw Materials, by developing the Raw Materials Information System in collaboration with European and global stakeholders and partners. Develop methodologies for assessing the raw materials flows in the economy and the trade flows for raw materials. Contribute to the criticality assessment for raw materials and to the analyses of the security of raw materials supply.		
JRC Key Orientations in the area of "Customs policy and the fight against fraud": 4.2.a) Against fraud - carry out research and analysis, and develop new technologies, applications and systems to contribute to combating fraud and other types of criminal activity, which threaten the supply chain, e.g. by enhancing customs risk analysis by using trade data on the status and movement of cargo containers, supporting the fight against evasion of customs duties and quotas, and that against trafficked, smuggled or counterfeited goods, and analysing unknown substances; 4.2.b) Training for custom authorities - establish pilot programmes to build capacity among, and provide training to, custom authorities on how to use applications or technologies, and how to share information and best practice.	Policy related outputs	Throughout 2017 Target value: 21

General objective 9 "A Stronger Global Actor"

Today's interconnected and interdependent societies are facing unprecedented global challenges and transnational security threats, such as climate change, extreme poverty and instability. However, this also opens up new opportunities for more sustainable development, equity and peace. To enhance the EU's and its

partners' resilience in this changing global environment, the JRC has taken a number of new initiatives to assist Commission services, with the monitoring and implementation of the 2030 agenda for sustainable development and its Sustainable Development Goals and Targets (SDGs), particularly in the areas of food security and nutrition, environment and biodiversity, resource efficiency and sustainable production and consumption, climate, energy and urban development. The JRC will consolidate its knowledge across these sectors and develop and organise related information, indicators, methods and data within the Commission, facilitating the integration and coherence of the EU's social, economic and environmental policies, as required to achieve the globally agreed targets by 2030.

Relevant general objective 9: A Stronger Global Actor	
Specific objectives 9.1 to 9.2 (contributing to H2020 Specific Objective 17 and to EURATOM Research & Training Programme Specific Objectives 9, 10, 11, 12 and 13): **A well-informed European policy-making, appropriately and timely supported by the JRC through the provision of high quality and innovative scientific and technical studies, tools, data, materials, models and standards, in the following areas:** **(Specific objective 9.1) Global Safety and Security** **(Specific objective 9.2) International Cooperation and Development**	Related to spending programme: H2020 and Euratom
Main outputs in 2017:	
Key orientations (KOs) of the JRC Work Programme (WP) for 2017-2018[Error! Bookmark not defined.]	

Description	Indicator	Target
JRC Key Orientations in the area of "Global Safety and Security": 9.1.1 Fight against security and safety threats, crisis management and disaster resilience 9.1.1.a) Disaster resilience, emergency and crisis management - provide scientific and analytical services, develop tools and build capacity to support the entire disaster risk management cycle (disaster prevention, preparedness, response and recovery), including via a dedicated Knowledge Centre for Disaster Risk Management, and provide assistance for risk vulnerability and crisis assessment to improve the knowledge base for humanitarian emergencies and disasters; 9.1.1.b) Fight global, trans-regional and emerging threats - support activities contributing to stability and peace, including analysis, the provision of methods and tools, capacity building and	Policy related outputs	Throughout 2017 Target value: 128

collaborating with international partners to monitor precious raw materials, ensure maritime security and counteract global and trans-regional threats, including climate change; develop early warning systems and capacity building activities. 9.1.2 Global nuclear safety and security 9.1.2.a) Technical assistance and scientific support to EU partner countries and international institutions for the implementation of the Instrument for Nuclear Safety Cooperation, EC support programme to the IAEA and Instrument contributing to Stability and Peace, and participation in International Working Groups; 9.1.2.b) Development of methods, technologies and standards for the detection of nuclear and radioactive materials outside regulatory control and fighting the illicit trafficking of such materials; supporting EU policy on nuclear non-proliferation through the implementation of the EU export control regime and the analysis of open source information. Operational support for Member States and international organisations; 9.1.2.c) Support for Member States, partner countries and international institutions (IAEA, etc.) to enhance technical knowledge on nuclear security using the European Nuclear Security Training Centre (EUSECTRA). Training to support the implementation of the EU non-proliferation policy; 9.1.2.d) Contributing to safeguards, proliferation resistance, and physical protection of innovative designs of nuclear reactors in synergy with the GIF.		
JRC Key Orientations in the area of "International Cooperation and Development": 9.2.1 2030 Agenda on Sustainable Development 9.2.1.a) Support the monitoring and implementation of the SDGs by developing and integrating	Policy related outputs	Throughout 2017 Target value: 80

knowledge management tools and organising information on related policies, indicators, methods, and data, facilitating the integration of the social, economic, and environmental information necessary to achieve the SDG targets, the SDG targets, taking into account international monitoring frameworks and indicators, and national monitoring efforts 9.2.2 Food security and nutrition, rural development and sustainable agriculture 9.2.2.a) Monitor agricultural resources, analyse situations of food and nutrition insecurity (including food poverty) and provide support with modelling and information systems to build more resilient communities in countries, including to the impacts of climate change. 9.2.3 Climate change, environment, natural resources, and water 9.2.3.a) Analysis, capacity building, provision of data, maps and methodologies on the extent of and vulnerability to climate change in developing countries, including guidance towards a more targeted allocation of climate finance; 9.2.3.b) Monitoring, provision of scientific advice, development of ICT tools, dissemination of information and capacity building for partners in developing countries, to support multilateral or bilateral agreements related to natural resources, with a focus on forestry, land, and land use change, soil, raw materials, biodiversity, ecosystem services, agriculture and water, where appropriate in cooperation with relevant international organisations, including FAO, UNEP, and the International Resource Panel. 9.2.4 Energy 9.2.4.a) Map out and monitor activities, develop geographical information system (GIS) tools, provide technical assistance, share best practice and build capacity in support of international, bilateral, and regional energy cooperation		

initiatives, including renewable energy. 9.2.5 Horizontal policies: aid effectiveness, transparency and policy coherence 9.2.5.a) Develop methodologies, indicators and ICT tools, and carry out macroeconomic analyses of development issues in support of the agenda for change, policy coherence for development and aid effectiveness; focus on measuring the impact of EU aid.		

Relevant general objective(s): **General objective 1: A New Boost for Jobs, Growth and Investment** **General objective 3: A Resilient Energy Union with a Forward-Looking Climate Change Policy** **General objective 4: A Deeper and Fairer Internal Market with a Strengthened Industrial Base** **General objective 9: Europe as a Stronger Global Actor**	
Specific objective 10: In order to ensure the most relevant and timely scientific support to European policy-making, the JRC will effectively and efficiently coordinate its activities related to the management of the JRC WP cycle, of the relations with policy DGs and other policy and scientific stakeholders and knowledge management. Note: this specific objective refers to a) the policy support coordination activities and b) knowledge management activities not mentioned in the JRC WP 2017-18. This specific objective covers all areas of work of the JRC (ie. all CGOs, as explained in the "Strategy" chapter of the Strategic Plan)	Related to spending programme(s): H2020 and Euratom

Main outputs in 2017:

Outputs related to the management of the JRC WP cycle, of the relations with policy DGs and with other policy and scientific stakeholders and of the SPP cycle

Output	Indicator	Target
Work programme coordination	WP process and procedures updated and aligned with 2030 strategy	March 2017
	Work Programme 2018-2019 adopted by College without negative opinion	December 2017

Coordination of relations with Commission services	Successful DG bilateral meetings Relevant policy support reflected in JRC Work Programme & Memoranda of Understanding Strengthened JRC role in better regulation initiatives High quality input into inter-service consultations & meeting High quality briefings, concept notes, policy briefs	Throughout the year
Coordination of inter-institutional, international relations and outreach: a. Strengthened dialogue with inter-institutional partners, EU Member States, H2020 Associated Countries and international partners b. Structured relations with policy and scientific stakeholder organisations (academies, universities, umbrella organisations, +…)	a.1 2017 Science Meets Parliaments and Science Meets Regions events a.2 Information sessions reflecting the JRC's work involving the Council's Research Working Party and other Council groups a.3 Meetings of the DG JRC with MS and H2020 Associated Countries. Thematic (expert) events organised and promoted. Joint reports with stakeholders published and promoted. a.4 Signing of new Collaboration arrangements (World Bank Group, Chinese Academy of Sciences, Japan AIST) and organisation of steering group meetings (NOAA, MCTI, etc). b1. Successful implementation of the Strategic Partnership Framework according to Scoreboard indicators b2. round-tables with EIT, and Knowledge Innovation Communities (KICs)	Q1-Q4

c. JRC involvement at relevant, major international/global events	c1. Concept notes on the JRC participation at High level events are approved and JRC relations and cooperation with the organisers are strengthened. c2. JRC work is showcased at major international/global events (participation of JRC speakers; sessions and side events (co-) organised by JRC; JRC involvement in event steering committees)	Q1-Q4
d. Effective JRC governance and Impactful outreach	d.1 JRC Weekly Briefing (internal) and other regular (external) products for stakeholders e.g monthly "Science & Policy briefing"	Q1-Q4
	d.2 Citizen questions timely answered via JRC helpdesk to Europe Direct Research Enquiry Service	
	d.3 Board of Governors organisation and coordination Milestones: • 3 Plenary Board of Governors meetings per year • Assisting the coordination of the Board's Ad-hoc groups meetings	Q1-Q4
e. Opening of JRC physical Research Infrastructures to external users	e.1 Successful implementation of the strategy for open access through its adoption on a pilot basis by ELSA, NanoBiotech Lab, Actinide User Lab, and EUFRAT Laboratories	
	e.2 Annual activity report	
f. Linking research and innovation with standardisation as part of the Joint Initiative on Standardisation		Q2
g. Generation IV (Nuclear Reactors) International Forum (GIF):	g. Commission decision	

4 System Arrangements for (Sodium-cooled Fast Reactor (SFR), Very High Temperature Reactor (VHTR), Gas-cooled Fast Reactor (GFR), Super Critical Water Reactor (SCWR)		
Scientific development With a view to pursue excellence in research and extensive interaction with research institutions as the basis for credible and robust scientific-technical policy support: 1) Gradually raise the percentage of exploratory research, through the management of the exploratory research programme, hosting specific exploratory projects on topics novel to the JRC and managing a new scheme for collaborative doctoral partnerships 2) Gradually build up competences in emerging, policy relevant areas through excellent research	Indicator 1: Percentage of exploratory research staff within the JRC (exploratory staff includes: staff working on exploratory projects (ER), staff recruited for the Centre for Advanced Studies, existing grant holders category 20 and new PhD's recruited under collaborative doctoral partnerships) Indicator 2: Percentage of exploratory research MAWP projects on emerging, policy relevant areas	Target 1: 2017: 2.0% Target 2: 2017: 15 %
Coordination of the management cycle and of Quality Assurance a. Coordination of the Annual Activity Report Process b. Annual evaluation of the JRC Work Programme (JRC Productivity and Impact Review, PRIME) c. Coordination of ex-ante assessment for WP 2016-17 d. Coordination of the Management Plan Process e. Coordination of the JRC indicator system (MP, AAR,	a. JRC Annual Activity Report 2016 b. JRC Productivity and Impact Report 2016 including a mapping of JRC outputs and impacts c. Ex-ante assessment report d. JRC Management Plan 2018 e. Up-to-date, consistent and relevant indicator	Q1 Q2 Q3 Q4 Throughout the year

TdB). f. Excellence Mapping to feed in mandatory mid-term evaluation of JRC	system f. JRC Excellence Mapping Report 2017	 Q3
Outputs related to knowledge management		
Output	Indicator	Target
Introductory training for JRC staff in evidence-informed policy	No. of JRC staff trained on two-day course	50
Management of Connected spaces for all European Semester teams, in line with the Commission's decision to put in place far reaching organisational reforms to break silos, and enhance collaboration across traditional boundaries and deliver change	Satisfaction of 'Semester'-staff	Improvement of feedback compared to previous cycle
Connected country-knowledge spaces for harvesting best available inputs in terms of country-specific data, information and knowledge	No. of country-knowledge spaces	10 Member States
Knowledge Management Methodology and Knowledge Sharing	a. Facilitate creation of Communities of Practise and Knowledge Centres; b. Roll-out of Connected@Commission; c. Implementation of Commission wide one-stop-shop for knowledge; d. Complete JRC Knowledge Mapping based on data sources and skills development tool; e. Horizon Scanning : Follow-up on definition of methodology, processes and strategic business intelligence courses	a. 2 CoPs launched by end 2017 b. Team established and 5 cross DG processes implemented by end 2017 c. Operational January 2017 d. System in place and tested for the 8 KM units and the CoP migration by end 2017 e. Process in place by March 2017 (in collaboration with I2)
2. Access to Knowledge Resources	2.1 PUBSY simplification strategy	Adopted and implemented by end 2017
3. Knowledge Based Communication	Roll-out of JRC wide events calendar	Operational January 2017

Specific objective 11: To ensure the highest quality of its policy support, the JRC will effectively and efficiently maintain scientific excellence in its core competences **Note: this specific objective refers to all areas of work of the JRC (ie. all CGOs, as explained in the "Strategy" chapter of the Strategic Plan)**		**Related to spending programme(s) H2020 and Euratom**
Main outputs in 2017:		
Output	Indicator	Target
Publication of scientific results in peer reviewed journals. Scientific results in peer-reviewed journals co-authored with peer organisations beyond Europe. Scientific results of exploratory research	Peer-reviewed publications listed in SCI-e and SSCI	Throughout 2017 Target value: >680

PART 2. MAIN ORGANISATIONAL MANAGEMENT OUTPUTS FOR THE YEAR

A. Human resource management

In support of its business operations, the JRC aims to "Recruit, train, assess, motivate and retain highly qualified staff so that the effective and efficient operation of the DG as well as promotion of equal opportunities within the DG will be ensured". During 2017 the JRC will optimise the long term alignment of competences in the JRC with the Commission requirements as outlined in its JRC Strategy 2030. In 2017 the JRC contributes actively to the implementation of the Commission-wide HR actions of staff engagement and talent management. The continuous development of the talent management programme plays a very important part of the Human Resource management objectives for 2017, where the talent management programme launched in 2016 will be evaluated and results thereof would enable the creation of off-spring wider programmes targeting strategically important competence areas. The JRC continues to perform well in the staff wellbeing domain, where it is one of the DGs enjoying a high satisfaction in the Commission, according to the latest staff satisfaction survey. In order to maintain this satisfaction level the JRC will continue to engage in the fit@work programme across its different sites and to provide leadership development opportunities in order for the JRC managers to continue engaging with their staff, developing them and showing authentic concern for their wellbeing.

The HR Modernisation project implemented according to the Communication on Synergies and Efficiencies of April 2016 makes changes to the way that HR services are delivered. HR services will be delivered by an Account Management Centre (AMC) inside DG HR. The JRC will have an HR Business Correspondent, responsible for defining HR strategy and taking HR decisions, in consultation with the management of the DG, as well as ensuring that the DG gets the HR service it needs, in cooperation with the AMC.

The JRC will participate in the second pilot phase of HR Modernisation and will move to the new way of working from July 2017. The JRC will be supported by AMC8 which will serve it on all the sites. In addition the JRC staff working in Brussels will be able to use the services of AMC2.

The definition of HR strategy and priority actions to make progress towards the Strategic Plan targets are the responsibility of the HR Business Correspondent and will continue to be addressed in the JRC's Management Plan and Annual Activity Report.

Objective: The DG deploys effectively its resources in support of the delivery of the Commission priorities and core business, has a competent and engaged workforce, which is driven by an effective and gender-balanced management and which can deploy its full potential within supportive and healthy working conditions.		
Main outputs in 2017:		
Output	Indicator	Target
1. In order to improve the **female representation in middle management** positions according to *SEC(2015)336* the JRC's plans the following main outputs:		

1a. Continuous encouragement for women to apply, wherever possible, to vacancies that arise 1b. Close monitoring of upcoming HoU vacancies, whether retirement, resignation or mobility and evaluate current female talent pool in respect to the vacancies. 1c. Full evaluation of the pilot talent management programme which took place in 2016 and develop a new programme	1a. Percentage of applications from internal female staff to published Unit Head vacancies. 1b. Percentage of female staff selected to published Unit Head vacancies. 1c.i. Number of participants to the new talent management programme 1c.ii. Participants' evaluation of the talent management programme 1.c.iii. Percentage of applications for Deputy Unit Head/Unit Head positions 1.c.iv. Continuation of the female talent network via self-established networking and support from the HR experts. Currently a vibrant network on the Connected platform where experiences are being shared and peer support given.	1a. At the moment no current value is available but the number of applications will be monitored. 1b. For vacancies appearing in 2017 ensure a miminum of 35% females selected 1c.i-ii. Positive feedback from participants to the talent management programme for female AD staff. 1c.iii. 25% of participants applying for Deputy Unit Head/Unit Head positions by end of 2017. 1.c.iv. 30% of members of the network contribute and share with the network on the online platform
2. In order to increase **staff engagement** the following main outputs are planned: 2a. Competence development and management of talents within the context of the JRC change agenda and the Commission HR strategic agenda as a	 2a.i. Staff satisfaction survey indicators 2a.ii. Outcome of specific targeted JRC staff engagement surveys	 2a.i JRC Staff engagement in the Commission Staff Satisfaction Survey to remain above the EC average. 2a.ii. Nine action plans (one per JRC Directorate) following the 2016 Staff Satisfaction survey

whole.		and the specific targeted JRC staff engagement surveys to be developed and carried out at Unit/team level.
2b. Building on the 2016 talent management programme for female AD staff (as mentioned in output 1b above) and its extension to a larger population.	2b.i. Design, adoption and roll out of a new inclusive JRC talent management umbrella programme. 2b.ii. Gender balance in all categories of staff	2b.i. Positive feedback from participants to the new inclusive JRC talent management umbrella programme 2b.ii. Continuous improvement in gender balance
2c. Implementation of the talent management, leadership and mobility programmes covering diversity, competencies and geographical dimensions.	2c. Participants' evaluation of the talent management, leadership and mobility programmes	2c. Positive feedback from participants to the talent management, leadership and mobility programmes
2d. Translation of the Commission's Diversity Strategy 2016-2019 into a JRC Action Plan (dealing with gender and disability)	2d. Regular monitoring of the implementation of the specific JRC Action Plan translating the Commission's Diversity Strategy 2016-2019	2d. Monitored throughout the year
2e. Leadership development i.e. continuing to build upon the skills of the managers to be able to manage increasingly complex issues and a wider variety of skills sets at the same time being able to lead in modern and authentic manner.	2e.i. Number of specific leadership development indicators 2e.ii. Introduction of 360 degree evaluation of JRC managers	2e. Positive feedback from participants to the leadership development programme 2e.ii.50% of JRC managers to agree to evaluation by end of 2017.
2f. As part of the JRC 2030 Strategy and its Knowledge Management key pillar, provision of skills to staff through training courses to interact more effectively with policy makers	2f.i. Number of specific training courses linked to the JRC Knowledge Management key pillar 2f.ii. Participants' evaluation to specific training courses	2f. Positive feedback from participants to the specific training courses

2g. Comprehensive staff induction, recognition and exit schemes 2h. Alumni network to continue to grow	2g.i. Elaborated JRC uniform strategy for staff induction 2g.ii. Reduction of time-period for new staff to be able to perform in their jobs. 2g.iii. JRC Annual Awards and local events recognising staff achievements, including promotion on the Connected platform. 2g.iv. Number of staff accepting exit interviews 2h. Proportion of ex-JRC staff to join alumni network	2g.i & 2g.ii. Positive feedback on induction training programme 2g.iii. Number of recognition awards given throughout the year 2g.iv. Rolled out exit interviews based on learnings from the 2016 pilot 2g.v. reach 50 % of the leavers throughout 2017. 2h. 50 % of ex-JRC staff to join alumni network
3. In the context of the JRC's implementation of the **"fit@work" Commission Programme** for 2017, the main outputs will be training and awareness-raising activities.	3a. Number of Training and awareness-raising activities carried out to promote a fit@work culture in all JRC sites 3b. Number of nutrition awareness actions in the canteens, social and cultural activities, specific training programmes and ergonomic actions in all JRC locations 3c. Number of events promoting the role of the medical services and the social support to staff in all JRC locations 3d. Results from surveys carried out as a means to get staff opinion on ongoing actions on the needs and suggestions for future initiatives	3. At least once throughout the year: • Promote physical activities in each JRC site • Promote leisure activities in each JRC site • Promote physical and mental health in each JRC site • Promote good worklife balance in each JRC site • Inform staff of the supportive working conditions available and ensure that the JRC line managers are aware to such a high degree that the policy on supportive working conditions are being applied in a consistent manner..

B. Financial Management: Internal control and Risk management

The JRC has put in place the organisational structure and the internal control systems suited to the achievement of the policy and control objectives, in accordance with the Commission's internal control standards and having due regard to the risks associated with the environment in which it operates.

The JRC is committed to implement, maintain and report on an effective and reliable internal control system, so that reasonable assurance can be given that the resources assigned are used according to the principles of sound financial management; that the risk of errors are minimised and do not exceed 2%; that the control procedures put in place give the necessary guarantees concerning the legality and the regularity of the underlying transactions; and that the controls put in place are cost-effective.

During 2017 the JRC will, as part of its revised Anti-Fraud Strategy (AFS) and its related action plan, continue to ensure that the controls in place adequately cover the risk of fraud and that preventive measures are implemented as foreseen in the AFS.

Objective 1: Effective and reliable internal control system giving the necessary guarantees concerning the legality and the regularity of the underlying transactions.		
Main outputs in 2017:		
Description	**Indicators**	**Target (2017)**
The target for 2017 will be achieved by the following outputs: - Training courses, awareness-raising activities, regular finance and procurement network meetings, exchange of best practise and communication through JRC Connected to raise awareness and competence on procurement and financial issues - Further development of the functionalities of the Public Procurement and Management Tool (PPMT) aimed at completing the support of the full procurement process including pre-award. - Enhancement of the corporate dimension of PPMT in order to serve as the Commission's back-office tool for the procurement process.	1. Estimated residual error rate 2. Estimated overall amount at risk for 2016 for the entire budget under the JRC's responsibility 3. Estimated future corrections 4. Proportion of exceptions 5. Quality of procurement procedures submitted to the Public Procurement Advisory Group (PPAG)	1. Residual error rate below the JRC's materiality criteria of 2% 2. Amount at risk below the JRC's materiality criteria of 2% 3. 100% recoveries and correction of specific errors 4. < 1% of transactions 5. ≥95% with positive opinion The JRC intends to continuously improve its internal control system to ensure the adequate management of the risks relating to legality and regularity of the underlying transactions, taking into account the nature of the purchases, payments and revenue concerned.

Objective 2: Effective and reliable internal control system in line with sound financial management.		
Main outputs in 2017:		
Description	**Indicators**	**Target (2017)**
1 Conclusion reached on 'Cost effectiveness of controls – Area' 'Procurement' to enable the JRC to adapt the frequency and intensity of controls taking into account the related risk levels.	**Overall indicator 1:** The overall cost of control relating to all control costs incurred in the procurement process. **Sub-indicator 1(a):** Cost of controls of the procurement stage up to selection of the offer and evaluation. **Sub-indicator 1(b):** Cost of controls of the financial transaction **Sub-indicator 1(c):** Cost of supervisory measures (ex-post controls)	Overall indicator 1: <6% Sub-indicators: 1(a) <4% 1(b) <4% 1(c) <0.4% The targets for 2017 are set taking into account that these indicators are very much dependent on the number and value of procurement procedures and financial transactions executed and the time spent by staff on the related control activities.
2. Conclusion reached on 'Cost effectiveness of controls – Area' 'Contracted Income' to enable the JRC to adapt the frequency and intensity of controls taking into account the related risk levels.	The overall cost of controls of the 3 stages of the competitive process / total competitive projects value	Target for 2017 is set at ≤0.3%; taking into account that this indicator is very much dependent on the number and value of competitive project proposals and the time spent by staff on the related control activities.
3. Internal Control Standards awareness campaign taking the form of training courses on the revised Internal Control Framework, workshops, events and the use of JRC Connected as a communication tool.	Implementation of Internal Control Standards in the JRC measured by the average of scores obtained from the annual survey on the implementation of Internal Control Standards. (Scores range between 1 ("Disagree") and 5 ("Agree").	Average score >= 3.4
4. The main outputs will be: - Payments, registered, processed and approved within legal time limits - Encouragement of companies to make use of the Commission portal for electronic invoicing to further improve the payment delays.	Timeliness of payments	≥95%

Objective 3: Minimisation of the risk of fraud through application of effective anti-fraud measures, integrated in all activities of the DG, based on the DG's anti-fraud strategy (AFS) aimed at the prevention, detection and reparation of fraud.		
Main outputs in 2017:		
Description	**Indicator**	**Target**
Regular monitoring of the implementation of the updated anti-fraud strategy (AFS) of the JRC, as planned for 2017, and reporting on its result to management.	% of implementation of actions planned for 2017 in the updated anti-fraud strategy	100% - implementation Reporting to management – twice per year
Increased level of anti-fraud awareness which will be achieved by the implementation of the updated AFS action plan specifically by the actions related to training and awareness-raising in the area of anti-fraud and ethics	Regular measurement of the ethical climate and the fraud awareness for target population(s) as identified in the JRC's AFS. This indicator is measured taking into account the average of scores obtained from the annual survey on the implementation of Internal Control Standards quantifying the anti-fraud awareness and the ethical climate using the rating scale of 1 ("Disagree") and 5("Agree").	Ethical climate rating of 4

C. Better Regulation [only for DGs managing regulatory acquis]

N/A for JRC

D. Information management aspects

The Commission adopted a new corporate strategy for data, knowledge and information management in October 2016. The new strategy establishes a corporate framework while leaving room for DGs to develop and implement their own approaches tailored to their unique needs. A new Information Management Steering Board has been created to oversee the implementation of the strategy, to ensure coherence between actions and to prioritise them. The Director General of DG JRC has been appointed as member of the Board and DG JRC will therefore contribute actively to the implementation of this strategy in 2017. In particular, we will provide support to several elements of this strategy, e.g. pilot projects to enhance knowledge sharing in key policy areas, such as the European Semester; increased use of collaborative tools; competence and knowledge centres; the

infrastructure to support a big data capability; staff training and development policies focused on knowledge sharing and collaborative working, as described in the Specific Objective 10 and the document related outputs that the JRC will be carrying out in relation to Knowledge Management Methodology and Knowledge Sharing. We will implement an ad hoc operational governance model aimed at defining the right level of visibility of JRC information and promoting the use of integrated IT tools, improving access to the information and developing a knowledge sharing culture.

With specific accent to document management, we will focus on the following:

Objective: Information and knowledge in your DG is shared and reusable by other DGs. Important documents are registered, filed and retrievable. **Main outputs in 2017:**		
Output	**Indicator**	**Target**
The target for 2017 will be achieved by the following outputs:		
Rules promoting "Commission" as default visibility for files created by JRC. Such default visibility, respecting the need-to-know principle, will set up the basis framework for information sharing and reusability.	Revision of applicable work instruction % of JRC files shared and made reusable by the Commission.	100% - Q1 2017 60% - Q4 2017
Fully reviewed filing plan by appointed and trained document management correspondent in all JRC lead departments ('chef de file'). This review on the basis of ad hoc governance model will foster increased visibility and accessibility of JRC information.	- Implementation of the JRC Document Management Correspondent (DMCO) terms of reference - Regular monitoring of filing plans as per Terms of reference - Number of JRC DM training courses	End of June 2017 100% monitoring of filing plans & related reporting. One training session per JRC site (intended for all lead departments based in the respective JRC site)
HAN Integration of JRC IT tools supporting core business (JPB, PUBSY) and collaborative platforms (SharePoint, Connected). Combined	JRC undertakes the necessary steps once the adoption of integration projects is given by EC Central Services.	End 2017

with above 2 outputs, this integration will reinforce knowledge sharing and working together culture across JRC and Commission.		

Finally, the reader is also referred to the Specific Objective 10 and the document related outputs that the JRC will be carrying out in relation to Knowledge Management Methodology and Knowledge Sharing.

E. External communication activities

Objective: Citizens perceive that the EU is working to improve their lives and engage with the EU. They feel that their concerns are taken into consideration in European decision making and they know about their rights in the EU. **Main outputs in 2017:**		
Output	Indicator	Target
Organisation of stakeholder events 'Science meets Parliaments' and Science Meets Regions (some involving the Commissioner Navracsics)	Number of 'Science meets Parliaments'-events organized.: Number of 'Science Meets Regions'- events organized: Number of social media mentions, social media interactions, etc	1 1 Indicator to be tested in the course of 2017
Euronews Science Reports on timely issues related to JRC research in the service of EU citizens and policy making	Number of Reports produced and broadcast by Euronews Number of youtube views, nr of visitors, nr of social media mentions	4 Indicator to be tested in the course of 2017
Production of key publications such as: 1 JRC Annual Report, 1 JRC Annual Conference Report and distribution to targeted stakeholders	Timely delivery of the reports Number of downloads	Q1-Q4 Indicator to be tested in the course of 2017
Knowledge-Based Communication: Further implement performant web presence, use of social media and virtual tours	Degree of operability	Operational Q2 2017

Annual communication spending:	
Baseline (2016)	Estimated commitments (2017)
N/A	1.9 million €

F. Example(s) of initiatives to improve economy and efficiency of financial and non-financial activities of the DG

As is outlined in the Introduction to the present Management Plan, the JRC Strategy and the reorganisation are designed to enhance the effectiveness, efficiency as well as flexibility and adaptability of the organisation. The introduction includes numerous cross-references to concrete examples of objectives and outputs planned for 2017 in both Parts 1 and 2 of the MP as well as in the Annexes.

To illustrate these initiatives, the support to the European Semester is mentioned here. The introduction of Member States tags at the level of meta-data will greatly enhance the speed and effectiveness of information retrieval, structuring and processing, and hence overall efficiency.

Moreover, the Knowledge Centres, both existing ones and yet to be created, are structured around policy challenges. They bring together, in one place, available in-house and external knowledge and expertise in a given domain. This will not only allow more effective and efficient use of the information/knowledge but it will also open up new ways of using this information and knowledge.

Moreover, i.e. in addition to the JRC's internal organisation and the way in which the JRC works and interacts with other DGs, the JRC is also active in directly enhancing effectiveness and efficiency of other DGs. In this context, the JRC helps to customize the JRC tool "Project Browser" (JPB) for use in DG ENV. The JPB is a well-tested tool using commercial hard– and soft-ware and which was developed in-house for special Commission needs. This approach helps to save development costs for the Commission and the European taxpayer.

G. Infrastructure

Infrastructure Development

In line with Chapter 11 of the JRC Strategy 2030, "DG JRC must have internationally-recognised, modern, safe and secure infrastructure, which creates a positive working environment. It must be environmentally, cost and resource efficient. It must be managed in an effective, coherent and consolidated manner". The outputs planned for 2017 in this field will therefore target this aim and contribute to the renewal of often ageing premises dating back to the 1950's or 1960's in many cases. This renewal will also allow JRC to respect European Legislation imposed to Member States, which will make this action readable to the countries hosting a JRC site.

Objective:
Infrastructure development: Harmonise the approach to infrastructure development across the JRC.
Energy conservation: Drive energy efficiency gains.

Operational efficiency: Increase efficiency of site-related facilities and services. **Main outputs in 2017:**		
Output	Indicator	Target
1a. Surface area of new buildings delivered and buildings demolished and refurbished with respect to Directive 2012/27/EU. The following infrastructure projects are planned to start in 2017: - construction of new buildings and other facilities - full refurbishment of a building - demolition of buildings	Surface area calculations	An annual assessment of the total surface not meeting the national minimal standards in terms of energy efficiency on the basis of article 5 of the Directive 2012/27/EU. A minimum of 3% (as defined in the Directive) for refurbishment should be reached annually.
1b. Implementation of Energy Performance of buildings Directive 2010/31/EU: - Construction of a new building in JRC Ispra (already included in 1a above)	Finalized construction of nearly zero-energy buildings	Construction of the new building to start during 2017, once the approval is given from the European Parliament and the Council, and is expected to have a construction duration of 2 years.
1c. JRC Infrastructure Development Plans	Development plans available for all sites	In line with JRC strategy 2030, all sites should have an approved development plans covering the period until 2030.

Decommissioning

The planning and budget of the Decommissioning Programme are periodically reviewed since its start in 1999. This exercise is intended to align progress of projects with priorities and with needs of the programme. It also provides the data for the preparation of the future budget requests.

Objective: **Implement the Decommissioning & Waste Management Programme (see progress indicators in Annex 2)** **Main outputs in 2017 (Main outputs for 2017 broken down according to the four relevant JRC sites can be found in Annex 2)**		
Output	Indicator	Target
Finalisation of review	Documents available	Q2

of budget and strategy		
Start of preparation of Communication From The Commission To The Council And The European Parliament Decommissioning of Nuclear Installations and Management of Radioactive Waste: Management of Nuclear Liabilities arising out of the Activities of the Joint Research Centre (JRC) carried out under the Euratom Treaty COM(2017)	Draft document available	Q4

Supplementary research programme for the High Flux Reactor in Petten (The Netherlands)

Objective: **Operation of the high-flux reactor** **Main outputs in 2017**		
Output	Indicator	Target
High Flux Reactor (HFR): HFR report 2014-2015	Report and Staff Working Document (SWD)	Q2

ANNEXES TO THE MANAGEMENT PLAN

Annex 1. Tables

The performance tables are provided in the body of the document.

Annex 2. Indicators and outputs related to decommissioning

Objective:
Implement the Decommissioning & Waste Management Programme (see progress indicators)

<u>Brief description:</u>
The decommissioning activity aims to progressively dismantle the JRC's nuclear installations, either already obsolete (with no foreseen further use) or "future liabilities" (still in use). It also intends to treat "historical" waste (i.e. waste accumulated in the past) and waste arising from the dismantling operations. In 1999, the Commission decided to launch a programme to meet this objective. By this choice, the Commission shifted to the practice adopted by most EU Member States, preferring to start the decommissioning immediately after shutdown of the installations rather than deferring decommissioning in the hope that decreasing radiological activity would reduce the financial burden. The programme started in 1999 and is based on the assumption, made for budgetary planning reasons, that the decommissioning of the last nuclear installation and the final disposal of historical wastes will be achieved around 2035.
Due to the status of their facilities and to their respective environment, the Ispra site (IT) is engaged in a wider range of activities than the three other sites Geel (BE), Karlsruhe (DE) and Petten (NL), where most facilities are still operational.

Main outputs in 2017

Description	**Latest known result**	**Intermediate target (end of 2017)**	**Final target**
1) Decommissioning and waste mgt. activities at **Ispra**			
- Management of Nuclear Material and High Level Waste (HLW) up to its Intermediate Storage	Call for tender on hold, reprocessing as alternative option is under investigation Feasibility study contract for reprocessing signed	Provide grounds to evaluate the reprocessing alternative	Evacuation of HLW ready (2022)
- Construction of waste treatment facility (grouting facility, GF)	Implementation of Alternative options after turnkey contract resolution Demolition of old cementation plant completed Major civil works call for tender published for building 41 C seismic upgrade	Start building seismic upgrade. Award contract for supply of electromechanical equipment	GF in operation (beginning 2019)
- Qualification and			

supply of final waste package (FWP) containers	FWP qualification tests completed, final approval pending comfort letter from Sogin	Obtain letter of comfort from Sogin	FWP 1st production batch ready for use (in 2019)
- Radioactive waste characterisation and super-compaction	Procurement of IP2 containers delayed Approval of "Piano Operativo delayed by I.S.P.R.A. waiting letter of comfort by Sogin	Waiting for approval of "Piano Operativo" by Safety Authorities;	Perform 1st three campaigns on historical waste by 2022
- Evacuation of high level waste from "LCSR" facility (fuel remnants and activated material)	Fuel remnants & activated material packaged		Fuel remnants transferred to ESSOR hot cells (in 2018 after TSA commissioning)
- Temporary storage area for nuclear materials (TSA)	Internal Emergency plan had been approved No activity waiting for TSA commissioning	Waiting for TSA commissioning Perform transport of material during "Hot Test" of TSA	TSA formally in operation (in 2018)
- Decommissioning of obsolete "FARO" nuclear facility and management of associated waste	Waiting for approval of external emergency plan FARO facility dismantling 100% completed		"Cleared" waste evacuated and project closed (2018)
- Decommissioning of obsolete "STRRL" nuclear facility (excluding the tank farm facility, TF)	STRRL pre-decommissioning stopped at 36% pending approval of licence conversion by Ministry for Economic Development	"Clearance" of waste procedures under elaboration and review with Safety Authorities Waiting for STRRL license conversion;	STRRL facility (ph. 1 excl. Tank Farm) 100% decommissioned by 2023

2) Pre-decommissioning - waste management activities **Karlsruhe**			
- Dismantling obsolete equipment (glove boxes)	70% (+ 5) glove boxes dismantled	71% (+ 4) glove boxes dismantled	100 % of legacy glove boxes dismantled (date not defined)
- Residual contribution to German waste repository (residual budget as updated by German Authorities in 2014)	37% of budget committed	46% of budget committed	100 % of the budget committed (in 2023)
- Reduce inventory of commercial spent fuel on which characterization studies have been completed in our hot cells.	Two batches of spent fuel, from Phillisburg and Gundremmingen nuclear power plants, are in JRC Karlsruhe hot cells.	Transport Phillisburg spent fuel batch back to owner.	No commercial spent fuel batches on which characterization has been completed left in hot cell.
3) Pre-decommissioning and waste management activities at **Geel**			
- Evacuation of nuclear material	Sorting, classification and conditioning of additional nuclear material identified for future evacuation	Signature of contract for removal of nuclear material	- 100 % of identified materials evacuated
- Dismantling/evacuation obsolete VDG equipment	8000 items identified Conditioning, decontamination and preparation for respective waste streams	Ongoing evacuation and clearance	- 100 % of obsolete equipment is evacuated
4) Pre-decommissioning - waste management activities at **Petten**			
- transport and decontamination of steel waste for recycling; recovery of concentrated radioactive slag and transport of excessively activated	steel samples transferred to interim storage at NRG for combination with similar waste (cost savings); timing dependent	- steel samples sent with NRG waste to Siempelkamp (Krefeld)	- steel decontaminated and recycled; activated steel and slag sent to COVRA

steel samples and slag to COVRA storage facility	on NRG;		
- optimization study, transport and disposal of JRC legacy waste (un-irradiated experimental fuel) to COVRA	feasibility study for combined transport (with ECN, NRG) is required for cost evaluation and is underway	Execution of combined transport	- all material evacuated
- preparation of strategy for HFR decommissioning	- preparation of draft roadmap for development of strategy finalised	- clarity about options for JRC to best prepare for HFR decommissioning	decommissioning of HFR (date not defined)
- Update of HFR decommissioning cost estimation (legal requirement, every 5 years) and decommissioning plan	- latest report from 2012, contract signed in 2016		
		- results and report available by end 2017 to be sent to Dutch regulator;	

Annex 3. Key orientations for the JRC's multi-annual work programme 2017-2018

1. A new boost for jobs, growth and investment

1.1 Agriculture and rural development

1.1.a CAP implementation - develop efficient and innovative tools to implement agricultural legislation.

1.1.b Environmental needs - develop methods and tools for the integrated assessment of agriculture, rural development and the economic impact of taking into account the environment at farm and regional level (so that CAP instruments can be tailored to environmental needs).

1.1.c Resource efficiency and climate change - model soil, water and ecosystem dynamics in order to improve their sustainable management in agricultural systems, and make a better use of the potential of bioeconomy. Study the effects of climate change on the agricultural sector, assess the potential of climate change mitigation and adaptation strategies.

1.1.d Agricultural market, trade & food security - carry out economic analysis of the competitiveness and trade relations of the European agri-food sector), the performance of European agri-food systems (including the food chain) and their linkages to jobs and growth as well as contribution to European and global food security.

1.2 Education, culture, youth and sport

1.2.a Education and training systems - monitor trends under EU policy strategies (e.g. Europe 2020 and ET2020) and provide evidence of the successful implementation and development of such policy frameworks;

1.2.b carry out research on policy relevant themes such as efficiency and equity in education investment, role of (higher) education for regional development and smart specialisation, education and societal wellbeing, integrating vulnerable groups such as migrants, refugees and other minorities into the education system, and early childhood learning; study the impact of digitisation on education and training practices and systems;

1.2.c Cultural and creative sectors - develop evaluation tools to measure and monitor cultural activities and creativity at city level to assess the impact of specific culture-oriented initiatives on economic and social development (see also section 11.1.c).

1.3 Environment

1.3.1 Protecting and enhancing our natural capital

1.3.1.a assess water resources and water use efficiency, floods and droughts (linked to key orientation 9.1.1.a); provide hydro-economic modelling and assessment of implementation scenarios for the Water Framework Directive and related directives; provide integrated analyses of water allocation across economic sectors for Europe and other regions of the world (water-energy-food ecosystems); develop methods for the monitoring and assessment of chemical, biological and ecological water quality. Develop standards and reference materials for pollutants for fresh and marine waters, setting consistent and comparable nutrient boundaries across Europe; develop minimum quality requirements for water reuse (also contributing to the circular economy – see section 1.3.2.a); develop the knowledge base, including the modelling framework on oceans and coastal environments, in particular for the Marine Strategy Framework Directive. Continue the research work on mapping and assessing ecosystem services delivered by freshwater and marine ecosystems that can be of interest for the EU Biodiversity Strategy. Support the development of a holistic approach to assessing and managing the risks from the simultaneous presence of multiple chemicals (mixtures) in the aquatic environment, in particular gathering, assessing and developing the scientific and technical knowledge on effect-based tools and on identifying problematic substances in mixtures;

1.3.1.b Biodiversity, forests and soils - support the implementation of the EU biodiversity strategy, notably by assessing ecosystem services and natural capital accounting in the context of the environmental knowledge community, the green infrastructure, the invasive alien species information system, global biodiversity monitoring and the sustainable supply and demand of biomass for all uses. Analyse and model forest resources and develop information systems on forests and forest fires in support of the EU forest strategy. Support the EU Soil Thematic Strategy by modelling soil functions and developing the European Soil Data Centre (ESDAC); monitor and model land and soil degradation and desertification; and participate in networks such as the Global Soil Partnership.

1.3.2 A circular, green and competitive low carbon economy

1.3.2.a Sustainable consumption and production and the circular economy - elaborate criteria and measures for the implementation of product policy and facilitate information exchange on best practice. Determine best available techniques and develop indicators for waste management, and assess how to optimise energy recovery from waste in line with the EU waste hierarchy. Support the management of the EU raw materials knowledge base (see also KO 4.1.a) and develop quality criteria for secondary raw materials. Support the eco-innovation action plan, in particular the environmental technology verification programme. Develop life-cycle methodologies, data and analyses for sustainable consumption and production and other circular economy related policy actions, including the assessment of the product-waste interface (i.a. reparability, durability, and recyclability), and the environmental footprint of products and organisations. Assess environmental and industrial policies;

1.3.2.b Environmental knowledge, information and indicators - develop environmental indicators and lifecycle based methods for incorporating environmental considerations into other policies, e.g. via the better regulation toolbox, and for the roadmap to a resource-efficient Europe. Contribute to the Environment Knowledge Community (EKC) as a better way to generate, plan and share environmental knowledge, including through the EKC Knowledge Innovation Projects (KIPs). Implement the infrastructure for spatial information in the European Community (INSPIRE) and the shared environmental information system..

1.3.3 Protection from environment-related risks to human health and wellbeing

1.3.3.a Chemicals and nanomaterials - support the implementation of the chemicals' legislations and policy development in cross-cutting areas. Set up a toxicology knowledge base and further develop and maintain the Information Platform for Chemical/Nanomaterial Monitoring IpCheM, including the nanomaterial repository, especially in view of supporting the European Human Biomonitoring Initiative (HBM4EU). Support mutual acceptance of chemicals and nanomaterial data at international (e.g. OECD) level; develop and promote alternatives to animal testing; develop methodologies, standards and reference materials for nanomaterials (also see key orientation 4.1);

1.3.3.b Air quality, pollutant emissions and industrial accident prevention - monitor and model ambient air quality and emissions (for vehicle emissions see also key orientation 4.1.a); carry out integrated impact assessments of air quality and climate policies and provide tools to facilitate air quality management at national, regional and local level; support the implementation of EU air quality policies through harmonisation and standardisation programmes, the improvement and the validation of innovative methods; determine best available techniques for implementing the Industrial Emissions Directive; develop information systems on, and carry out analyses of, industrial accidents.

1.4 Maritime affairs and fisheries

1.4.a Common Fisheries Policy implementation - develop and apply biological, economic, social, spatial and genetic/genomic approaches to sustainable and competitive aquaculture and fisheries, in the EU and worldwide;

1.4.b Maritime spatial planning and coastal management - develop and collate knowledge for maritime spatial planning and coastal management, and the relevant knowledge management tools (EU 'atlas of the seas' and Marine Competence Centre);

1.4.c Maritime security - improve EU maritime surveillance systems, enhance their interoperability and provide support to implement selected actions under the EU Maritime Security.

1.5 Health and food safety

1.5.1 Health

1.5.1.a Healthcare and health information - the standardisation, harmonisation and improvement of healthcare and health information in the EU, with an initial focus on cancer and rare diseases; this includes the coordination/development of European health registries, the launch of an innovative and comprehensive quality assured healthcare pathway (starting with breast cancer, followed by colorectal cancer), monitoring cross-border health threats and reference systems for health measurements;

1.5.1.b Promotion of a healthier society - action in the field of physical activity, nutrition, alcohol and tobacco in the framework of chronic disease prevention;

1.5.1.c Support to nano-related policies, health technology assessment, chemical monitoring data and implementation of endocrine disruptors criteria. Dissemination of novel toxicity approaches.

1.5.2 Food safety

1.5.2.a Food and feed safety - management of six EU reference laboratories, including the development of harmonised/validated methods and new analytical tools in the area of food and feed safety control and the pre marketing authorisation of GMOs and feed additives;

1.5.2.b Food and feed fraud - assistance in the fight against food fraud; production of certified reference materials for food and feed analysis.

1.5.2.c Plant health - protection of plant health by early detection and plant health monitoring initiatives; support for the establishment of a priority list of plant pests in the Union.

1.6 Regional policy

1.6.a Territorial modelling for impact assessment of policies and investments - develop an integrated modelling capacity to better assess the impact of investments and policies in regions, cities and macro-regions, including demographic trends, and climate change impacts;

1.6.b Economic, social and environmental cohesion and development - develop indices and quantitative analyses at urban, regional and macro regional levels;

1.6.c Support for macro-regional and smart specialisation strategies - integrated processes and qualitative methods to support the development, implementation and monitoring of smart specialisation strategies and capacity building at national, regional, urban and macro-regional levels.

1.7 Research, science and innovation

1.7.a Research and Innovation policies - model, monitor and analyse the drivers of, and barriers to research and innovation, including the effectiveness of policy instruments related to research and innovation at EU, national, regional and (cross)-sectorial levels. Research and Innovation Observatory for the collection, production and dissemination of data and analysis related to national research and innovation policies. Indicators, scoreboards, information systems and web platforms for monitoring and analysing the implementation of EU research and innovation policies. Foresight support and horizon scanning for the identification of research and innovation priorities.

1.7.b Fuel cells and hydrogen technologies - support under the Fuel Cells and Hydrogen Joint Undertaking, typically in cross-cutting areas, such as safety regulations, codes and standards;

1.7.c Low carbon energy observatory - provide data, analysis and intelligence on the state of the art of different energy supply technologies, their industrial development, market barriers and global competition;

1.7.d Bio-economy - develop a Knowledge Centre providing data collection, analysis, dissemination and modelling on the bioeconomy, and the assessment of food and nutrition security. On an ongoing basis, provide data and analysis on sustainable biomass supply and demand at EU and global scale, covering all uses of biomass, to provide a basis for coherent policies on the bioeconomy, including relevant agriculture, food, environment, energy and industry policies. JRC work on the bioeconomy will be closely interconnected with work described in chapters 1.1 (agriculture and rural development), 1.3 (environment), 1.5 (health and food safety), 3.1 (climate action) and 3.2 (energy).

1.8 Transport

1.8.a Transport innovation - support the strategic transport innovation agenda and develop the transport innovation and monitoring information system (TRIMIS);

1.8.b Alternative fuels - carry out pre-normative testing and contribute to the development of standards supporting the implementation of the alternative fuels infrastructure in the framework of the Alternative Fuels Infrastructures Directive (AFI); assessment of the relevant national AFI policy frameworks; and modelling of and support for electro-mobility standardisation;

1.8.c Transport policy analysis - socioeconomic analyses of the transport sector, using transport models, quantitative methodologies, data, scenarios and technology watch; congestion indicators; and harmonise transport data with spatial and environmental information;

1.8.d Intelligent transport systems and electronic tools - technical support for the implementation of the 'digital tachograph', in particular the preparation of new technical specifications; support

for the development of cooperative intelligent transport systems; development of electronic tools in support of quality inland water transport across Europe;

1.8.e Safety and security - develop tools and databases on EU-wide multimodal accidents and incidents, and data visualisation and exploration tools for transport safety analysis, including for aviation safety; and carry out performance testing and analysis of aviation security technologies.

1.9 Employment, social affairs, skills and labour mobility

1.9.a Employment and social policy - provide high quality monitoring, benchmarking, impact assessment and evaluation support for employment and social policy related measures, notably through three competence centres referred to in section 11.1;

1.9.b European Pillar of social rights - support the establishment of a European pillar of social rights and the updating of the social acquis through analysis of the changing nature of work and welfare systems, collaborative economy and health and safety at work;

1.9.c Skills and employment - provide analysis of the distribution and evolution of skills and their links with employment potential.

2 A connected digital single market

2.1 Digital economy and society

2.1.a analysis in ICT-led innovations, the impact of digital technology and related economic models on growth, jobs and consumer welfare in the EU, with a particular focus on policy priorities related to the EU digital single market and the digital agenda for Europe;

2.1.b development of IT tools and methodologies to analyse the radio spectrum inventory and the security of digitally connected objects ('Internet of Things') and of new technologies (e.g. 5G, Quantum Technologies);

2.1.c cybersecurity analyse data protection and privacy issues of the new telecommunication paradigms, strengthen the information base on counterfeiting and provide policy options to introduce the 'privacy by design' approach in the development of the new communication and online services;

2.1.d technical support related to the interoperability of e-infrastructures (supporting the digital European Research Area) and open access (supporting open science); use of the convergence of big data with online tools (supporting citizen science) and assessment of the interoperability of energy services (in support of smart grids).

3 A resilient Energy Union with a forward-looking climate change policy

3.1 Climate action

3.1.1 Mitigation

3.1.1.a Economic and climate modelling/assessments - design and implement domestic and international climate policies and strategies to keep global warming well below 2° C; further develop in-house capacity to carry out such assessments;

3.1.1.b GHG emissions from agriculture and LULUCF - monitor, report and verify energy-related, agricultural and forestry emissions to meet legal obligations at EU and international level; modelling and other analyses on how to integrate the assessment of these emissions into EU and international legislation; GHG emissions and mitigation options in agriculture; compiling global emissions inventories;

3.1.1.c Vehicle emissions - technical support for implementing and developing policy measures to decarbonise the transport sector; specifically, analysing the real world fuel consumption and CO2 emissions of light- and heavy-duty road vehicles awarding; support the assessment of eco-innovation CO2 savings and derogations for small-volume manufacturers of cars and vans and assess smart mobility technology innovation scenarios;

3.1.1.d Alternative fuels for transport - assess the environmental sustainability, technological development and costs of bioenergy and biofuels and of associated GHG emissions savings, including 'well-to-wheel' analyses and support for alternative fuels legislation;

3.1.1.e Support the operations of climate innovation funds - technical support for the knowledge sharing facility of the NER 300 funding programme, management of NER 300-related communication activities as well as provision of support for the design and implementation of its successor, the Innovation Fund.

3.1.2 Increasing resilience to climate change

3.1.2.a Assess climate change impacts (economic and non-economic), vulnerability, resilience, and adaptation options in the EU and globally to support the review and update of the EU adaptation strategy and to meet the objectives of the Sendai framework for Disaster risk reduction (DRR) and the Sustainable Development Goals. In conjunction with the Knowledge Management Centres on DRR, on Migration, and on Territorial planning, respectively assess impacts of weather extremes, study the links between climate change and displacement/migration, and urban resilience (including support to the adaptation activities under the Covenant of Mayors for Climate and Energy, further covered under Key Orientation 3.2.d).

3.1.3 Climate science and observations

3.1.3.a advance our understanding of how climate change interacts with other parts of the Earth's system (e.g. ice and forests) and translate the findings into policy guidelines.

3.2 Energy

3.2.a Energy-climate-economy modelling - develop, validate, and run models for climate-energy-economy system, including development and maintenance of necessary databases or of other available energy models to the Commission; carry out relevant techno-economic analysis, in particular mapping latest evidence on techno-economic costs for energy supply and demand technologies; provide support for impact assessments and carry out energy modelling at national, regional and European level and analysis of the results; develop the capacity to contribute to the design of future energy-climate reference scenarios and make available to European stakeholders the tools to use or develop energy system modelling;

3.2.b Energy security - carry out security, safety, risk and techno-economic assessments of the EU's energy supply from conventional and unconventional resources (oil, natural gas); integrate resilience to the adverse impacts of climate change. This work includes security of supply, transmission and distribution of gas and of electricity, as well as the safety of offshore oil and gas operations, including tools for accident reporting and capacity building measures. Analyse privacy and cybersecurity in the energy sector;

3.2.c Internal energy market - assess the development of energy infrastructure and energy markets in the EU, including design of the retail market, new deal for energy consumers and protection of vulnerable consumers, integration of LNG and gas storage, super power grids, smart power grids (including interoperability and smart-metering), flexibility requirements and gas networks, and the new market design initiative; support measures for digitisation of energy markets; develop methodologies for the economic valuation of energy security in the evaluation of energy infrastructure projects, including Projects of Common Interest (PCI); provide background data and analysis which can support the preparation of future energy prices and costs reports;

3.2.d Energy efficiency - support the implementation of the EU legislation in areas of renewable energy and energy efficiency, including on the efficient heating & cooling; provide technical support for the development of the legislative framework for the time period after 2020; analyse the development and deployment of energy efficiency technologies; assess technology innovation in energy-intensive industries; support the Covenant of Mayors for Climate and Energy in the EU and beyond, including the assessment of plans on energy efficiency, renewables, emissions reduction, climate adaptation and access to energy; perform modelling and cost-benefit analyses; support through analytic tools, modelling and/or assessment the implementation of the Energy Union Governance Regulation, which requires from the Member States the preparation of national integrated energy and climate plans;

3.2.e Low carbon energy technologies - carry out techno-economic assessments of renewable energy technologies and their cost-effective deployment, including by using geo-spatial tools and by analysis of relevant renewable energy scenarios and support of the implementation of the revised directive; perform pre-standardisation work on photovoltaic and other renewable energy technologies; prepare a web-based CO2 Storage Atlas for publication and further updating;

3.2.f Energy Research, Innovation & Competitiveness (RIC) - Support the implementation of the Research and Innovation and Competitiveness (RIC) dimension of the Energy Union, through the management of relevant knowledge and available scientific data; support the integrated SET Plan through a strengthened information system (SETIS) and the ACEI (Accelerating Clean Energy Innovation) strategy. Develop indicators that monitor the progress of energy technology innovation as an input to the annual State of the Energy Union report. Support the development of indicators and intelligence through relevant techno-economic analysis and energy systems modelling.

3.3 Safe and secure use of the nuclear energy

3.3.1 Safety of nuclear reactors and nuclear fuels

3.3.1.a collection, analysis, and assessment of nuclear power plants' operational experience worldwide, and dissemination of information to the Member States' regulatory authorities;

3.3.1.b research on structural materials for analysis and modelling of ageing of components and structures with a view to improving residual lifetime assessment techniques;

3.3.1.c improvement of the safety assessments of innovative reactor designs in synergy with the Generation IV International Forum (GIF);

3.3.1.d generation of reference samples and scientific data on the safety performance and development of codes and modelling for safety assessment of both conventional and innovative nuclear fuels in operational, transient and accident conditions;

3.3.1.e support the EU's internal policy on nuclear safety by providing technical and scientific assistance for the implementation of the EU Nuclear Safety, Nuclear Waste and Spent Fuel and Basic Safety Standards Directives and related EU policy.

3.3.2 Safety of spent fuel, radioactive waste management and nuclear decommissioning

3.3.2.a development of techniques for spent fuel and nuclear waste characterisation and study of the physico-chemical mechanisms relating to the long-term storage of spent fuel and disposal of nuclear waste;

3.3.2.b studies for the reduction of the radiological toxicity of wastes through advanced separation and transmutation and for the safety assessment of recycling technologies. Determination of scientific data and preparation of reference samples of spent fuel;

3.3.2.c development and assessment of innovative technologies and techniques applied to nuclear decommissioning. Exchange and dissemination of knowledge developed, findings and information.

3.3.3 Nuclear emergency preparedness and response (EP&R), environmental monitoring and radiation protection

3.3.3.a support for Member States an Commission services on the exchange of information in case of emergency and on radiological monitoring and measurements relating to radioactivity in the environment, including hosting, maintaining and developing the related database and reporting system;

3.3.3.b development of severe accident modelling, radiological source term evaluation, accident management of nuclear power plants and enhancement of preparedness for nuclear or radiological incidents through benchmarking of dispersion models.

3.3.4 Nuclear safeguards

3.3.4.a technical and scientific development of destructive and non-destructive methods and techniques (verification and informatics systems, analytical services, training, special equipment, etc.) and of standards and reference materials to support the Euratom safeguards system. Operation of the Safeguards on-site laboratories and in-field support for Euratom inspections;

3.3.4.b development of containment and surveillance techniques in the nuclear fuel cycle process, from enrichment facilities to geological final disposal.

3.3.5 Promote understanding the fundamental properties and behaviour of innovative nuclear and structural materials for safety assessment and model validation;

3.3.5.b support for the standardisation and harmonisation of radiological measurement methods in the EU and collaboration with key partner countries and international organisations (IAEA, OECD-NEA) in the field.

3.3.6 Knowledge management, training and education

3.3.6.a monitoring EU trends in human resources in the nuclear energy field and facilitating the mobility of human resources in the sector throughout the EU. Developing tools for knowledge management and for transparency and dissemination of information;

3.3.6.b preserving, aggregating and disseminating specific scientific and technical knowledge related to nuclear safety, safeguards and security by providing operational support and training and by increasing access to the JRC nuclear laboratories for researchers from Member States and international organisations.

3.3.7 Nuclear science applications and use of radioisotopes

3.3.7.a development of techniques for medical radiotherapy and radio-diagnosis; contribution to a resilient and sustainable supply of medical radioisotopes in the EU; development of industrial and space applications.

4 A deeper and fairer internal market with a strengthened industrial base

4.1 Internal market, industry, entrepreneurship and SMEs

4.1.a industrial policy development, notably to support standardisation, reference measurements and (nano)materials; support for industrial sectors to enhance their environmental efficiency, energy performance, resilience to climate change, and achieve reductions in the intensity of GHG emissions, including vehicle emission test procedures and assessment of innovative technologies; material efficiency and circular economy; advanced manufacturing and key enabling technologies; SMEs and innovative companies, industrial competitiveness;

4.1.b Space Strategy - support for Galileo and the EGNOS, including signal, receivers and technical support for policy development and the management of R&D assets and resulting IPR; technical support for applications, implementation and further development of services, including Galileo PRS and security, spatial information analysis and data dissemination tools for Copernicus and EU contributions to civil and international space dialogues. Services and products of the Copernicus programme also contribute to CAP implementation (KO 1.1.a), marine-environment monitoring (KO 1.3.1a), atmosphere-monitoring (KO 1.3.3.b), green-house gas emissions monitoring (KO 3.1.1.b) and other climate change-related information (KO 3.1.3.a), indices and quantitative analyses of economic, social and environmental cohesion and development (KO 1.6.b), maritime security (KO 1.4.c), addressing illegal immigration and trafficking in human beings (KO 8.1.a), disaster resilience, emergency and crisis management (KO 9.1.1.a) and international cooperation and development (KOs 9.2.2.a and 9.2.3.b).

4.1.c support to the implementation and management of the revised medical devices and in vitro diagnostic medical devices regulatory framework through scientific, technical and related logistic means; support to the cosmetics regulatory framework including through promotion of alternative methodologies to animal testing.

4.1.d raw materials - support the implementation of actions and EU policies and monitor the progress of the implementation plan for the European Innovation Partnership on Raw Materials. Monitor the primary and secondary raw materials global and European markets and support the management of the EU Knowledge Base on Raw Materials, by developing the Raw Materials Information System in collaboration with European and global stakeholders and partners. Develop methodologies for assessing the raw materials flows in the economy and the trade flows for raw materials. Contribute to the criticality assessment for raw materials and to the analyses of the security of raw materials supply.

4.2 Customs policy and the fight against fraud

4.2.a against fraud - carry out research and analysis, and develop new technologies, applications and systems to contribute to combating fraud and other types of criminal activity, which threaten the supply chain, e.g. by enhancing customs risk analysis by using trade data on the status and movement of cargo containers, supporting the fight against evasion of customs duties and quotas, and that against trafficked, smuggled or counterfeited goods, and analysing unknown substances;

4.2.b training for custom authorities - establish pilot programmes to build capacity among, and provide training to, custom authorities on how to use applications or technologies, and how to share information and best practice.

5 A deeper and fairer Economic and Monetary Union

5.1 Economic and Monetary Union

5.1.a model and carry out socioeconomic analyses to improve macroeconomic, budgetary, structural, and financial developments and policies in the EU.

5.2 Financial stability, financial services and Capital Markets Union

5.2.a quantitative analyses for the development of the capital markets union and completion of the banking union;

5.2.b assess initiatives related to the regulation of the financial sector and to new dynamics and risks; maintain and further develop a data infrastructure for analyses of the EU financial sector;

5.2.c Analyse the social dimension of the Economic and Monetary Union.

5.3 Taxation

5.3.a Corporate taxation - modelling to support the action plan for fair and efficient corporate taxation in the EU; carry out analyses of the effects of corporate taxes and in particular develop modelling tools for assessing the impact of anti avoidance rules, the harmonisation of specific rules, changes in tax treaties and future EU policy initiatives.

5.3.b Fiscal policies - modelling and economic analyses of tax policies using the EUROMOD microsimulation model.

6 A reasonable and balanced free trade agreement with the United States

6.1 Trade policy

As part of its project on applied economic analysis of industrial competitiveness, sustainable production and consumption and EU trade (see section 4.1), the JRC provides methodological, modelling, and analytical support for impact assessments of free trade agreements and the socioeconomic and environmental implications of external trade6.1.a Trade policy

7 An area of justice and fundamental rights based on mutual trust

7.1 Justice, consumers and gender equality

7.1.a Consumer markets - analyse statistical indicators and methodologies to monitor consumer behaviour and market performance; data collection systems and their interoperability for product safety and market surveillance; application of behavioural insights.

7.2 Home Affairs and Security

7.2.a support to strengthen critical infrastructure and community resilience against all threats; improve critical infrastructure protection, understand and model vulnerabilities and interdependencies, including through synthesis and sharing of knowledge, exchange of good practice, exercises and networks related to critical infrastructure operators, training and awareness programmes for national authorities and operators of critical infrastructures;

7.2.b support the implementation of Action Plans on chemical, biological, radiological, nuclear (CBRN) and explosives (E) and of Regulation EU 98/2013 on explosives precursors, including through the provision of scientific support and research. Support the standardisation process for CBRN-E related detectors and other equipment. Exchange good practice among users and manufacturers of CBRN-E detectors and related equipment. Develop a single market for Security products and certifications of security related systems and their components such as Industrial Control Systems;

7.2.c understand and develop methodologies to counter emerging threats, such as hybrid threats and insider threats; understand how new technologies such as social media, mobile apps and virtual reality can be used to improve citizens' security and the security perception;

7.2.d provide 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 (using European Media Monitor EMM and Open Source Intelligence OSINT) and digital forensics

(including the online sexual abuse of children), open source intelligence and new psychoactive substances, including support for early warning and risk analysis.

7.2.e provide technical support and research to strengthen EU large information systems (e.g. identity document security, data quality and biometrics, interoperability); close information gaps in the field of security; enhance security at the external border (e.g. support for the design and implementation of the EU entry-exit system).

8 Towards a new policy on migration

8.1 Migration

8.1.a enhance the capacity of the European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union (FRONTEX) to carry out border controls, risk analysis and joint operations at the external borders; enhance European Police Office (EUROPOL)'s capacity to fight illegal immigration and the trafficking of human beings; enhance the capacity of FRONTEX's, (European Asylum Support Office (EASO)'s and European Union Agency for Fundamental Rights (FRA)'s operational and technical systems for managing migration;

8.1.b improve the EU's underlying border control IT systems for migration through work on biometrics, digital identity management and smart card security;

8.1.c support EU policy on addressing push and pull factors and reducing the incentives for people to migrate, including climate change as a root cause of forced displacement/migration;

8.1.d analyse the impacts of migration on the EU labour force and fiscal, education and welfare systems on the basis of medium term demographic projections; enhance the spatial dimension of integration (e.g. to account for cities where most of the integration issues arise);

8.1.e support early warning, risk analysis and prediction for enhanced situational awareness of migration flows;

8.1.f operate the Knowledge Centre for Migration and Demography, which will provide policy-oriented research and evidence-based analyses, observatories, partnerships, and capacity building.

9 Europe as a stronger global actor

9.1 Global safety and security

9.1.1 Fight against security and safety threats, crisis management and disaster resilience

9.1.1.a disaster resilience, emergency and crisis management - provide scientific and analytical services, develop tools and build capacity to support the entire disaster risk management cycle (disaster prevention, preparedness, response and recovery), including via a dedicated Knowledge Centre for Disaster Risk Management, and provide assistance for risk vulnerability and crisis assessment to improve the knowledge base for humanitarian emergencies and disasters;

9.1.1.b Fight against global, trans-regional and emerging threats - support activities contributing to stability and peace, including analysis, the provision of methods and tools, capacity building and collaborating with international partners to monitor precious raw materials, ensure maritime security and counteract global and trans-regional threats, including climate change; develop early warning systems and capacity building activities.

9.1.2 Global nuclear safety and security

9.1.2.a technical assistance and scientific support to EU partner countries and international institutions for the implementation of the Instrument for Nuclear Safety Cooperation, EC support programme to the IAEA and Instrument contributing to Stability and Peace, and participation in International Working Groups;

9.1.2.b development of methods, technologies and standards for the detection of nuclear and radioactive materials outside regulatory control and fighting the illicit trafficking of such materials; supporting EU policy on nuclear non-proliferation through the implementation of the EU export control regime and the analysis of open source information. Operational support for Member States and international organisations;

9.1.2.c support for Member States, partner countries and international institutions (IAEA, etc.) to enhance technical knowledge on nuclear security using the European Nuclear Security Training Centre (EUSECTRA). Training to support the implementation of the EU non-proliferation policy;

9.1.2.d contributing to safeguards, proliferation resistance, and physical protection of innovative designs of nuclear reactors in synergy with the GIF.

9.2 International cooperation and development

9.2.1 2030 Agenda on Sustainable Development

9.2.1.a support the monitoring and implementation of the SDGs by developing and integrating knowledge management tools and organising information on related policies, indicators, methods, and data, facilitating the integration of the social, economic, and environmental information necessary to achieve the SDG targets, the SDG targets, taking into account international monitoring frameworks and indicators, and national monitoring efforts.

9.2.2 Food security and nutrition, rural development and sustainable agriculture

9.2.2.a monitor agricultural resources, analyse situations of food and nutrition insecurity (including food poverty) and provide support with modelling and information systems to build more resilient communities in countries, including to the impacts of climate change.

9.2.3 Climate change, environment, natural resources, and water

9.2.3.a analysis, capacity building, provision of data, maps and methodologies on the extent of and vulnerability to climate change in developing countries, including guidance towards a more targeted allocation of climate finance;

9.2.3.b monitoring, provision of scientific advice, development of ICT tools, dissemination of information and capacity building for partners in developing countries, to support multilateral or bilateral agreements related to natural resources, with a focus on forestry, land, and land use change, soil, raw materials, biodiversity, ecosystem services, agriculture and water, where appropriate in cooperation with relevant international organisations, including FAO, UNEP, and the International Resource Panel.

9.2.4 Energy

9.2.4.a map out and monitor activities, develop geographical information system (GIS) tools, provide technical assistance, share best practice and build capacity in support of international, bilateral, and regional energy cooperation initiatives, including renewable energy.

9.2.5 Horizontal policies: aid effectiveness, transparency and policy coherence

9.2.5.a Develop methodologies, indicators and ICT tools, and carry out macroeconomic analyses of development issues in support of the agenda for change, policy coherence for development and aid effectiveness; focus on measuring the impact of EU aid.

10 A Union of democratic change

10.1 Methodological support to Better Regulation

10.1.a Competence Centre on modelling - contribute to high quality impact assessments of policy proposals and policy options, and promote their application at EU and Member State level;

10.1.b Competence Centre on micro-economic evaluation - provide technical advice, methodological support, specialised training and exchange on counterfactual impact evaluations;

10.1.c Competence Centre on Composite Indicators and Scoreboards - contribute to developing monitoring and benchmarking tools.

10.2 Support to innovative policy making

10.2.a Support innovation in EU policymaking through the development of generic tools and processes, including anticipation, behavioural insights, design for policy, citizens' engagement, media monitoring, data and text mining.

11 A stronger knowledge management capacity

11.1 Tools and skills for knowledge management

11.1.a Translation of knowledge into policy - translate data, information and knowledge into policy, including through training and through an inventory of country, regional and local knowledge;

11.1.b Knowledge management methods and tools- develop common platforms for the use of data, information and knowledge in support to policy making; provide access to knowledge sources; facilitate communities of practice, improve communication.

11.2 Intellectual property rights

11.2.a Manage the JRC's and the Commission's portfolio of intellectual property rights. Advise and assist the Commission on intellectual property matters. Increase awareness of intellectual property rights within the Commission and in the European Parliament;

11.2.b Promote collaboration on intellectual property rights and technology