

European Research Council

ERC Monitoring and Evaluation Strategy 2018

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1. Introduction

Entrusted with full authority over the scientific strategy and the decisions on the type of research to be funded, the ERC's Scientific Council shall at the same time "continuously monitor the ERC's operations and evaluation procedures and consider how best to achieve its objectives"¹ and be fully involved in the review and evaluation of ERC's activities to assess its achievements and to adjust and improve procedures and structures on the basis of experience².

This document outlines the approach that the ERC Scientific Council will take to monitor and evaluate the performance of the ERC operations and the impact of its funding activities³.

The overall aim of ERC Monitoring and Evaluation Strategy is to generate a broad and integrated understanding of the ERC's performance and impact that will enable the Scientific Council to report on results and achievements and to

continuously improve its scientific strategy guaranteeing the effectiveness of the ERC scientific programme, the quality of its operations and peer-review process and its credibility in the scientific community.

The ERC monitoring and evaluation activities will complement and enhance the evaluation efforts of the European Commission and will help in providing all interested parties with an evidence-base judgement needed for the rigorous appraisal of the ERC's activities in the longer term.

The ERC Monitoring and Evaluation Strategy will be revisited regularly and further developed to include the accumulated experience as well as best practices in monitoring and evaluation approaches of other funding agencies.

2. ERC mission and the objectives of the monitoring and evaluation activities

The prime core objective

ERC has been created with the mission to reinforce the excellence, dynamism and creativity of European research.

At the core of the ERC mission is the creation of radically new knowledge, allowing Europe to take a leading role in creating the scientific and technological paradigm shifts. ERC is expected to fund the very best cutting-edge science by investing in the best researches and their greatest ideas and generate those knowledge leaps that would enable us to understand more about the world around us, to improve our conceptual thinking, to transform our society for the better of our life and well-being.

The ERC success shall be ultimately evaluated on its achievements related to pushing forward the frontiers of knowledge.

01 The prime objective of the ERC monitoring and evaluation activities is to observe, measure and analyse evidence of the contribution of the ERC funding activities to the advancement of the frontier of knowledge and the scientific and technological impact of the new ideas in short and long term.

This objective regards the ERC core mission and has the following three dimensions:

Knowledge

D1.1 Advancing knowledge: identify the new and often unexpected scientific and technological results generated by the ERC-funded projects and, among them, those revolutionary discoveries that are triggering scientific paradigm shifts or become the core principles behind radical technological developments; follow their consequences; estimate in what measure the breakthrough results are due to new ways of working in science or to taking high risks,

D1.2 Emerging areas: follow the creation and development of new scientific fields, the novelty and originality of associating and combining research areas, the development of new scientific instruments and methodologies as a result of the ERC funding activities and assess their importance,

D1.3 Performing globally: evaluate the contribution of ERC-funded discoveries to reinforcing the performance and status of European research globally.

1) Regulation (EU) No 1291/2013 establishing Horizon 2020.

2) Council Decision 743/2013 establishing the specific programme implementing Horizon 2020.

3) This document has been elaborated taking into account the rationale behind the establishment of the ERC, the funding strategy developed by the Scientific Council, the input of the Scientific Council Working Group on Key Performance Indicators, the expert reports on monitoring and evaluation activities commissioned by ERC in 2014-2015 as well as the practice and experience of other funding agencies. The ERC Monitoring and Evaluation Strategy will be updated periodically.

The second objective

Talented researchers are the critical component for knowledge creation and the ERC funding activities have been designed to encourage the best researchers worldwide to participate in the ERC competitions, offer them the best support to fulfil their scientific ambitions and also prepare the young generation of researchers to confront their own exciting challenges.

02 The second objective of the ERC monitoring and evaluation activities is therefore to measure and assess the ERC contribution to improving the career prospects of the European researchers, to training the new generation of researchers and to attracting the world's best scientists to Europe.

This objective has the following three dimensions:

Researchers

D2.1 Promoting talent: evaluate how ERC helped its funded researchers to succeed in their professional careers, “empowered” them in controlling their research activities and, in the case of young researchers, accelerated their transition to / consolidated their academic independence,

D2.2 Nurturing talent: measure the ERC contribution to training the next generation of researchers,

D2.3 Attracting talent: determine in what measure the ERC funding activities attracted to Europe talented researchers from abroad, including Europeans resident outside Europe.

The third objective

Beyond the advancement of knowledge ERC is expected to have a significant structural impact by generating a powerful stimulus for driving up the quality of the European research system over and above the researchers and projects which the ERC funds directly.

03 The third objective of the ERC monitoring and evaluation activities is thus to measure and understand the ERC's contribution, in addition to ongoing efforts at Union, national and regional level, to reform, strengthen and unlock the full potential and attractiveness of the European research system.

The third objective has the following three dimensions:

Research Systems

D3.1 Host institutions: understand the extent to which ERC contributed to improving the quality of the research environments at Europe's universities and other research organisations and the working conditions offered to top researchers,

D3.2 Research policies: estimate in what measure ERC acted as an inspirational target for frontier research in Europe, opening new ways of working in the scientific world and stimulating national research systems to reform their policies, priorities and funding models,

D3.3 Funding structures: determine the influence of the ERC, its funding activities and operational practices to shaping the administrative organisation of research and the funding mechanisms for frontier research.

The fourth objective

Radical innovation and technological progress emerge from a solid base of excellent science. Although not falling under the ERC core mission, it is nevertheless expected that knowledge created on the ERC-funded projects will sooner or later impact outside science and generate benefits to the society that can take various forms.

04 The fourth objective of the ERC monitoring and evaluation activities is to trace over long periods of time the contribution of the knowledge created to driving commercial and social innovation and business inventiveness, generating economic growth, tackling societal challenges and influencing policy making.

This objective is a satellite to the ERC core mission, all together dependent on it, and has the following three dimensions:

Impact beyond science

D4.1 Generating economic benefits,

D4.2 Generating societal benefits,

D4.3 Improving policy making.

The fifth objective

05 Ultimately the ERC monitoring and evaluation activities should support the ERC Scientific Council to continuously monitor the ERC's operations such as to swiftly respond to emerging needs, to timely take corrective measures whenever necessary and to consider how best to achieve its objectives.

This fifth objective has the following three dimensions:

Operations

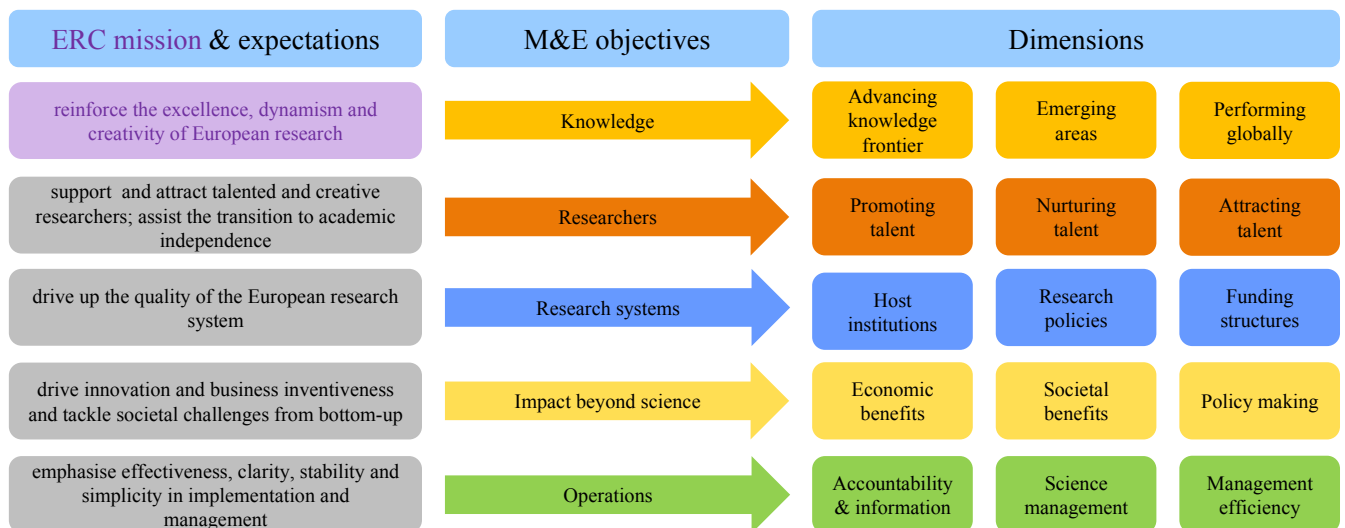
D5.1 Accountability and information: conduct a process of continuous collection, validation and analysis of data, helping the Scientific Council identify timely trends and patterns in the ERC funding activities (for example on the profile and quality of the applicants, on the mobility of researchers, on number of applications and success rates, on the composition of the panels),

Operations

D5.2 Science management: provide the Scientific Council with reliable information on the quality of operations at all

stages of interaction with the applicants and, in particular, the performance of the Peer Review mechanism that it has designed and continue to design, helping to ensure that the mechanism identifies ground-breaking scientific excellence, breakthrough ideas and talent regardless of a researcher's gender, nationality, institution or age, and does not disadvantage high-risk research topics, those dealing with ideas not yet fully tested and where the outcomes are uncertain, or inter-disciplinary proposals,

D5.3 Management efficiency: provide information to the Scientific Council and other stakeholders on the ERC organisational excellence and management efficiency in all aspects of its operations, and provide evidence in any attempt to simplify and improve ERC procedures with regard to having the ERC grants selected and operated according to simple, transparent procedures that maintain the focus on excellence, encourage initiative and combine flexibility with accountability.



3. Key principles of ERC monitoring and evaluation

- **Independence and Objectivity:** the results, conclusions and recommendations are delivered based on robust, quantitative and qualitative evidence, independently from any pressure and influence, in the spirit of objective judgement, with all assumptions clearly indicated.
- **High-quality and Relevance:** all efforts are made to ensure that the monitoring and evaluation activities and their outcomes met the highest professional standards, follow the state-of-the-art methods used in evaluation and are relevant for the ERC work and rationale.
- **Causality and Attribution:** a monitoring / evaluation exercise shall not treat the intervention as a black box that transforms inputs into achievements or failures but shall attempt to understand the inter-play between rationale, implementation and the external factors involved and to determine whether and to what extent the observed effects can be attributed to the intervention.
- **Focus and Proportionality:** the activities undertaken and the methods employed are designed to address the purpose of the monitoring / evaluation or the decision-making process and are tailored to the characteristics of the intervention/operation and the data available.
- **Priority and Resources:** the monitoring and evaluation activities are planned and prioritised in such a way that various components are not unnecessary replicated, that they do not compete for critical resources when this can be avoided and are informed by previous exercises when the case.
- **Transparency and Accountability:** the monitoring and evaluation activities shall document the methods used, make public the data available (to the extent possible) such that anyone can replicate the ERC findings or conduct their own investigations, and inform all stakeholders and the general public about what the ERC has done and achieved.

4. Specific considerations regarding the ERC monitoring and evaluation activities

A bundling of Monitoring and Evaluation activities - Monitoring generates evidence on the outcomes of the ERC funding measures, the performance of the ERC operations and the progress towards impacts over time in a continuous and systematic way. It generates factual data to underpin the strategy decision-making process of the Scientific Council, to meet the ERC reporting requirements and to improve the quality of future evaluation and impact assessment. It provides time series data that, under normal circumstances, will be more reliable in explaining behaviour than one-off data collection exercises. It feeds into the possible adjustment of any measure or activity or it can trigger possible corrective actions. It allows ERC to periodically report to the European Commission on its activities following all legal requirements.

Evaluation is an evidence-based assessment of the rationale, achievements and implementation of the interventions undertaken to fulfil the ERC mission, as well as their longer-term impact and sustainability. Evaluation covers the strength of the evidence obtained, and the implications for

the robustness of the conclusions reached. It goes beyond an assessment of what has happened by considering why something has occurred, what was the role of the ERC and how much has changed as a consequence. State-of-the-art scientific methodologies are used in evaluation, taking into account the contextual factors and including, as often as possible, tests against properly designed counterfactuals. Evaluation identifies appropriate follow-up actions and feeds into the decision on new strategic interventions, on a possible modification or suspension of an existing funding measure or an existing approach, on changes in operations.

The ERC success is to be evaluated on achievements related to the fulfilment of the ERC core mission, but the expectations related to structural impact and impact beyond science are also monitored without playing a key role in evaluation. Evaluation and monitoring exercises can take place through periodical comprehensive exercises for the core objective and/or through ad-hoc initiatives for non-core objectives.

The ERC programme evaluation activities will support the evaluation and assessment activities of the European Commission following all legal requirements. Under the requirements of EU legislation ERC Programme Evaluation takes place twice during the duration of the Framework Programme (interim and ex-post) and describes the extent to which the ERC interventions are Relevant, Effective, Efficient, Coherent (both internally and, when the case, with other EU interventions) and have achieved EU added value⁴. At the same time an impact assessment of the Framework Programme is required every time a new legislative proposal is written for a new programme.

From project selection to ex-post evaluation – The ERC projects are selected solely on scientific excellence and not on impact foreseen ex-ante. Proper indicators, measured ex-post against proper counterfactuals, could give an indication about the performance of the ex-ante process of selection. At the same time a successful selection certifies exceptional excellence potential. In this context it becomes critical for any evaluation exercise to distinguish between “selection effects” and “treatment/grant effects”, between ex-post performance due to ex-ante potential and ex-post performance due to having received the grant. The ERC monitoring and evaluation activities should regularly probe through the ex-post evaluation not only the impact of the intervention, but also the quality of the selection process, conducting proper counterfactual analyses and employing both qualitative research (by means of expert reviews, subject surveys, text mining, etc.) and quantitative research (including advanced statistical techniques).

From project to programme – The ERC achievements are more than the sum of the individual achievements of the supported projects. The ERC impact is documented starting from project level and going beyond the immediate results of the projects to their interlinked contributions to the body of scientific and technological knowledge.

Along-term window for assessing results – ERC monitoring and evaluation activities have a long-time perspective following the consequences of project results long after the projects themselves ended to capture the full realization of effects.

Continuity of interventions – The ERC monitoring and evaluation activities should consider the ERC interventions as a continuous stream over time and across consecutive Framework Programmes and approach the overall process in an integratory manner. This is the more important since

impact should be evaluated only after sufficient time has passed to allow for changes to be identified and/or measured.

Indicators – Both evidence of qualitative or quantitative nature, of objective or subjective type is important to measure the generation of new scientific knowledge, its value and its effects. Quantitative and qualitative evidence can be collected and analysed, although, obviously, not all the ERC monitoring and evaluation questions can be answered using measures. Bearing in mind the limitations of measuring and analysing evidence (e.g. often fail to identify complex issues like “quality of knowledge”, causal relationships and attribution), it is useful to identify key indicators and employ them to monitor and evaluate the ERC performance and its impact. These indicators should accurately reflect the objectives of the programme and take into account the availability of data and the arrangements needed to collect the necessary information.

The ERC indicators fulfil two main roles:

- offer rapid insights regarding the implementation of the funding activities and the progress towards outcomes/ impact,
- observe and communicate the ERC performance and impact in a simple way, at the same time allowing for a more straightforward comparison with the achievements of other funding programmes and organisations.

For the purpose of the ERC monitoring and evaluation distinction shall be made between core and non-core indicators, between performance (output/result) and impact indicators⁵ and between short-medium-long-term indicators.

The **core indicators** follow from the core objective of the Monitoring and Evaluation Strategy and feed into the monitoring and evaluation of the ERC achievement of its mission.

The **non-core indicators** mainly support the monitoring of ERC performance and impact.

The measurement of these indicators follows documented methodologies, exploring the influence of various parameters (like time windows, field classifications, etc.) on the robustness of the indicators and describing how suitable the indicators are to different research domains or subject categories.

The ERC core indicators are presented in Annex I of the Monitoring and Evaluation Strategy, which also includes some examples of frequently monitored non-core indicators⁶.

4) Better Regulation Guidelines, Commission Staff Working Document (2017) 350.

5) Output indicators relate to the specific deliverables of the intervention; Result indicators match the immediate effects of the intervention with particular reference to the direct addressees; Impact indicators relate to the intended outcome of the intervention in terms of impact on science/economy/society beyond those directly affected by the intervention.

6) The ERC Executive Agency performance indicators established in the Agency Annual Work Programmes to help the management evaluate and report on progress made in relation to the Agency operational objectives are not listed in the Monitoring and Evaluation Strategy. Nevertheless they are relevant for the Strategy's fifth objective “Operations”.

5. Implementation of the ERC Monitoring and Evaluation Strategy

Implementation mechanisms

The Monitoring and Evaluation Strategy is implemented as witnessed through a series of descriptive reports, analyses and studies of various profiles and scales, addressing the five objectives of the monitoring and evaluation activities together or separately, along one or more of their dimensions. The monitoring and evaluation exercises related to the core objective are conducted systematically⁷. Their results are periodically discussed by the Scientific Council, allowing for swift adjustments to their implementation as necessary. Systematic exercises are conducted internally and can either involve only in-house expertise or can be based on combining in-house capacity with the work of external independent experts. In the conduct of evaluation activities, the presence of independent experts brings value and impartiality to the entire process. The external experts can be contracted individually, similar to the ex-ante evaluation of proposals, or as expert groups dedicated to specific common tasks.

Other exercises are conducted on an ad-hoc basis. Some of them need to be repeated with some regularity to account for evolutions taking place in the meantime. They can be done internally (with or without external experts) or, in order to complement the internal capacity in terms of knowledge, practices and resources and/or to invite scientists and specialists from outside to undertake exploratory work or specific studies on analysing the performance and impact of ERC, they can also be commissioned externally. But also in this case, internal capacity is needed to assure that the study results can be absorbed for implementation in the ERC. Two mechanisms are available for external commissioning: calls for proposals (implying the award of grants) and calls for tenders (using public procurement procedures).

The Scientific Council is continuously interested in enlarging the scope and area of the monitoring and evaluation activities in terms of type of analyses, studies, reviews and reports, always produced using the best available methods and trying to improve on methodologies to deliver accurate and objective findings. It is also committed to providing ERC data for researches, who wish to use them for scientific research, at least to the extent that this is legally possible.

Lessons learned from past and on-going monitoring and evaluation activities

By and large, since its adoption in the first variant in 2009, the implementation of the Monitoring and Evaluation Strategy has been successful. The activities, analyses and studies implemented as part of the Monitoring and Evaluation Strategy have been instrumental in establishing and enhancing the reputation of ERC as an excellent funding agency. They provided evidence in the mid- and ex-post evaluation exercises of the Framework Programme and have helped to show how the ERC stands out as one of the main success of the European Union funding. In addition, analyses made on the funding operations have guided discussions of the Scientific Council and its Working Groups.

Important lessons were learned from the way the Monitoring and Evaluation Strategy has been implemented so far.

The ERC was very enthusiastic about engaging external expertise by launching calls for proposals/tenders to other organisations and quite optimistic about the expected results. However, one important observation is that the high expectations put in studies commissioned externally had not always been met. This is partly due to the fact that the calls for tenders seem to have reached a limited set of companies, some of which, although very experienced with European Commission public procurement rules, were sometimes ill equipped or not intrinsically motivated to undertake the analysis required to results at the highest professional standards. Another reason is arguably the lack of internal resources to adequately support and guide those studies. In the case of calls for proposals the funder has also less control over the implementation after the grant is awarded.

The use of independent experts and expert groups has been more successful partly because the experts could be selected individually by carefully considering their expertise and partly because they had focused and clearly formulated tasks. They also received a high level of support from Agency staff and interactions with the Scientific Council and Agency staff could be more easily organised.

This has led to a shift from more weight on externally commissioned reviews to more internally conducted activities, with or without external experts/expert groups.

7) For example the continuous collection of information about the prizes, awards and highlights related to ERC-funded research, the periodic analysis of the bibliometric performance of ERC publications and the annual qualitative evaluation of the frontier nature of ERC-funded research (Science-After-the-Projects).

However, constraints imposed by resource allocation within the Agency have not allowed for some of the activities and analyses, undertaken initially in an exploratory phase, to be scaled-up and sustained. For instance, still missing is a regular ex-post assessment of the quality of the peer-review selection process.

- An important lesson in this respect is the need to allocate adequate internal resources to the implementation of the Monitoring and Evaluation Strategy and build a strong internal capacity for monitoring and evaluation.
- A complementary lesson is that the Agency shall also explore other options for facilitating the participation of external expertise, for example by employing and/or seconding active scientists on short-term collaborations with the ERC Executive Agency.

Infrastructure development

The overall purpose of the data infrastructure development is to reinforce the ERC's capacity to collect, store and process information from various sources on its own.

The ERC has developed tools and systems for data collection, analysis and management which are critical for the monitoring and evaluation activities. In setting up the required infrastructure and developing the necessary tools, the Agency made extensive use of simple and cost effective ICT tools which helped the automatization of repetitive tasks and the easy retrieval and reuse of results of previous activities. In this context, an integrated ERC research and information system (ERIS) has been developed. It combines multiple sources of information on funded projects and their outcomes with tools for data search, statistics, benchmarking and portfolio analysis and makes the information easily accessible. It has increased the access to data and it has facilitated their use by the Scientific Council and the Agency staff. A lighter version for the general public is also being developed⁸.

The portfolio of methods used for data collection relies heavily on proposal and evaluation data, project reporting, access to scientific journals and bibliometric databases, and search of public sources of information.

- **The ERC grant application form** is the central instrument to collect data on the applicants, their track records and their research ideas proposed for funding. The application data includes not only structured data, but also the proposal texts, which can be analysed with text mining techniques and therefore deliver useful insights on the research proposed for monitoring and evaluation. Considering the importance

of a proper counterfactual data in impact analysis, the data collected for applicants who are not funded is extremely valuable, as this group of people is a very good control group for measuring the impact of the ERC funding.

- The information on the **evaluation of the proposals**, their grading and their evaluation reports, as well as information about the independent expert evaluators, is also part of the ERC monitoring and evaluation data platform, used mainly to monitor the quality of the operations and the selection process.
 - **The scientific reporting** is the most important tool of collecting the project results and it has been carefully designed and continuously improved by the Scientific Council with the aim of capturing the most important and reliable information about the immediate achievements of the projects, in direct relation to the objectives of the ERC funding activities, without burdening the researchers with unnecessary data requests. Whatever the future efforts for the harmonization of the Framework Programme procedures and IT tools shall be, it is critical to keep the scientific reporting separate from the financial reporting and to have its design under the control of the Scientific Council.
 - Through the **workforce statistics form** (optional) attached to the financial reporting, data are collected about the people employed in projects funded by the ERC to allow ERC to report on the members of the project teams and determine the effects of the ERC funding on the training of the next generation of researchers.
 - Access to **scientific journals** is the main source of retrieving expert opinions and considerations about the results of ERC-funded projects and the prizes and awards received by the ERC-funded researchers, enabling, among other, the authorized identification of research highlights and scientific breakthroughs and the positioning of the ERC-supported discoveries in the wider flow of science development.
 - Access to **raw bibliometric data** is critical for putting the results of ERC-funded projects in context and analysing them in a comparative perspective.
 - The search of **public sources of information** needs to be complemented by the collaboration with other funding bodies and agencies for exchanging data, information and best practices and benchmarking monitoring and evaluation results.
- The **peer-review qualitative evaluation** of the results of ERC-funded research is an extremely valuable source of information to understand the impact of ERC funding, especially when complemented by a proper counterfactual analysis.

8) Released to the public in October 2018: <https://webgate.ec.europa.eu/erceris/application/static/eris/index.html>

Surveys of ERC-funded researchers and carefully designed control groups have been occasionally employed for monitoring and evaluation purposes, although ERC is always careful to avoid burdening the researchers with additional requests for information. Nevertheless surveys are a rich source of information, providing details that cannot be covered by the project reporting especially when the data concerns outcomes long after the end of the project.

Another area which should be explored in the future is the possibility to use **linked open data** for monitoring and evaluation purposes. Indeed, the last couple of years have seen intense activities in making more and more data on research activities and scholarly communications not only openly accessible but also linked. For a funding agency like the ERC, this development offers at least two major advantages:

- it could allow the ERC to put its own data in context. For example, linked data on all major scientific prizes and awards would allow ERC to put in perspective their data on prizes and awards collected from grantees;
- it could potentially reduce the data collection efforts (both for the Agency and for the grantees). For example, high quality datasets of academic spin-offs in Europe and world-wide would reduce the efforts spent by the ERC in collecting extra data on start-ups linked to ERC projects.

Governance of implementation and planning of activities

Since 2013 the implementation of the Monitoring and Evaluation Strategy has been coordinated by a dedicated Working Group of the Scientific Council, “Key Performance Indicators”. Broadly, this Working Group has been entrusted with the mandate to develop headline indicators to assess frontier research, explore methodologies for the ex-post evaluation with counterfactual analysis and propose new monitoring and evaluation activities. Other Scientific Council Working Groups and individual Scientific Council members retain full freedom to propose alternative monitoring and evaluation activities as necessary.

The planning of the monitoring and evaluation activities is made through annual Action Plans covering determined periods of time and annexed to the Monitoring and Evaluation Strategy as rolling plans. They take stock of past activities, analyse the portfolio of on-going activities and assess which parts of the Monitoring and Evaluation Strategy

are not covered in order to plan future activities. Action Plans also help in the planning of resources and serve as basis for discussions and decisions in the annual planning of activities.

The ERC monitoring and evaluation activities have grown in range, complexity and intensity over the past years and as the ERC has accumulated more experience in the field and more results to process and report, programme monitoring and evaluation has become a very frequent topic on the agenda of the Scientific Council.

Annex II provides a review of past and ongoing monitoring and evaluation exercises that took place so far.

The monitoring and evaluation exercise serves a double role - on the one hand to report results and achievements to the Scientific Council and on the other to drive the strategic decisions of the Scientific Council. This process could be enhanced by ensuring a closer alignment of the Working Group and the Council to provide better integration of the monitoring and evaluation exercises with the decision-making process. This is becoming ever more important, as monitoring and evaluation evolve into a continuous process, which provides up-to-date inputs to the Commission’s monitoring and evaluation of the EU Financial Framework as well as to guide the ERC in its funding strategy evaluation.

In order to promote a more elaborate information exchange and discussion with the full Council and ensure a continuous involvement of the Council in monitoring and evaluation, the Scientific Council have decided that “programme monitoring and evaluation” will be a dedicated item on the agenda of the Scientific Council Plenary, when the following items will be discussed as appropriate:

- recent ERC monitoring and evaluation results are presented and discussed in view of implementing the Monitoring and Evaluation Strategy,
- new potential ERC headline indicators are brought to the attention of the Scientific Council,
- one or more features of the ERC funding activities are debated in the context of recent findings from monitoring and evaluation activities,
- the ERC operations are discussed following various monitoring and evaluation exercises,
- new proposals for monitoring and evaluation activities are put forward for discussion and approval.

Annex I. List of main ERC indicators

List of main indicators as agreed by the Working Group Key Performance Indicators so far and already tested in various analyses (in bold letters). In addition the list includes potential indicators that are being explored. The results of those analyses will be presented to the Scientific Council, who will formally decide which indicators should be included in the list of main indicators.

Core indicators (monitoring and evaluation indicators)	
Objective	Knowledge
Dimension	Advancing knowledge frontier
	OUTPUT: Number of ERC publications
	RESULT: Top 1% highly cited ERC publications
	RESULT: Field-weighted citation impact of ERC publications
	IMPACT: Percentage of ERC-funded projects creating scientific breakthroughs
	- the extent to which ERC scientific achievements result from high-risk research, inter-disciplinary research, novel or unconventional approaches. This will result in indicators at project or publication level
	Performing globally
	IMPACT: List of ERC grantees who are laureates of prestigious awards or (elected) members of prestigious learned societies
	- the extent to which ERC publications contributed to bringing EU research in world top. This will result in indicators at publication level
Non-core indicators (monitoring indicators)	
Objective	Researchers
Dimension	Promoting talent
	RESULT: % of ERC grantees who experienced upward career mobility during or after the project
	IMPACT: the survival rate of ERC-funded research groups after the project
	IMPACT: Number of years between PhD award and full professorship or equivalent position
	Nurturing talent
	RESULT: Number of PhD students and postdoctoral researchers trained in research as members of ERC-funded teams
	RESULT: % of ERC team members who experienced upward career mobility in academia after the project
	Attracting talent
	RESULT: Percentage of PIs/team members coming to Europe from outside EU and the Associated Countries
Objective	Research systems
Dimension	Research policies
	IMPACT: number of countries that launched funding schemes inspired by ERC's
	Funding structures
	IMPACT: number of countries that set up national research councils since the creation of the ERC

Objective Dimension	Impact beyond science	
	Economic benefits	Societal benefits
	<p><i>OUTPUT: Number and quality of patent applications</i> <i>RESULT: Number and quality of patents granted</i> <i>IMPACT: ERC publications referenced as prior art in patents</i></p> <p><i>RESULT: Number of start-up companies created on ERC projects</i> <i>IMPACT: Turnout/Market share of companies created</i></p> <p><i>IMPACT: Number of researchers trained on ERC projects who moved outside academia</i></p> <p><i>- the extent to which altmetrics could help to monitor societal impact. This will result in indicators at project or publication level</i></p>	<p>Policy making</p> <p><i>- the extent to which the results of ERC projects are used in policy-making, e.g. references in policy documents. This will result in indicators at project or publication level</i></p>
Objective Dimension	<p>Operations</p> <p>Accountability & information</p> <p>Science management</p> <p>Management efficiency</p> <p><i>As mentioned in the ERC Executive Agency Annual Work Programmes and Annual Activity Reports (AARs)</i></p>	

Annex II. Selected past and on-going monitoring and evaluation activities (as of October 2018)

Objective	Knowledge		Performing globally
Dimension	Advancing knowledge frontier	Emerging areas	
Ad-hoc exercise	WP2014 – SCIENTOMETRICS - Comparative scientometric assessment of the results of ERC funded projects (public procurement)	WP2009 – ERACEP – Emerging Research Areas and their Coverage by ERC-supported Projects (open call)	
Systematic exercise	Launched 2013 - The periodic analysis of the bibliometric performance of ERC publications		Launched 2009 – The continuous collection of information about the prizes and awards received by the ERC grantees, their memberships of prestigious learned societies and the research highlights of their work
	Launched 2015 - The annual qualitative evaluation of the frontier nature of ERC-funded research (experts)		
Objective	Researchers		
Dimension	Promoting talent	Nurturing talent	Attracting talent
Ad-hoc exercise	WP 2008 – MERC I - Monitoring ERC’s Implementation of Excellence (open call)		
	WP 2012 – ERCareer - Gender aspects in career structures and career paths (open call)		
	WP2016 – Study on Career Impacts of ERC Funding (public procurement)		
Systematic exercise			
Objective	Research systems		
Dimension	Host institutions	Research policies	Funding structures
Ad-hoc exercise			WP2014 - Funding Landscape (public procurement)
Systematic exercise	First report 2014 - (every 7 years) - The continuous observation of the structural effects of ERC in the EU Member States		
Objective	Impact beyond science		
Dimension	Economic benefits	Societal benefits	Policy making
Ad-hoc exercise			
Systematic exercise			

Objective Dimension	Operations		
	Accountability & information	Science management	Management efficiency
Ad-hoc exercise		WP2009 - DBF - Development and Verification of a Bibliometric Model for the Identification of Frontier Research (open call)	
		WP2013 - GENDERC - ERC practices and processes in the context of gender mainstreaming and in particular during the proposals' submission and peer review (open call)	
Systematic exercise		WP2016 - Study on open access, research data management and sharing within ERC projects (public procurement)	
		First report 2014 - (every 7 years) - ERC funding activities report Launched 2014 - The ex-ante (input) analysis of the research funded by ERC (Science-Behind-the-Projects)	
		Operational reporting on the monitoring of call and grant implementation Every Plenary – Every year –	
		ERC Executive Agency Annual Activity Report (AAR)	

Other ad-hoc studies/analyses that covered all or more than one objective:

- 2009-2011: "Early Signs of Wide-Ranging Impact of the Ideas Programme" (in-house)
- WP2008: EURECIA - Understanding and Assessing the Impact and Outcomes of the ERC and its Funding Schemes (open call)
- WP2015: The evaluation of Synergy Grant scheme (experts)
- WP2016: The evaluation of Proof of Concept scheme (experts)



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