European
Commission

Horizon 2020

indicators

*Assessing the results and
impact of Horizon 2020*

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INTRODUCTION

"One of the great mistakes is to judge policies and programs by their intentions rather than their results."
Milton Friedman

Research and innovation are pillars of the Europe 2020 Strategy to put Europe back on the path to smart, sustainable and inclusive growth. Horizon 2020 is the EU's funding programme for research and innovation that provides support from basic research through to innovation. Almost €80 billion of funding is available over seven years (2014 to 2020) – in addition to the private and national public investment that this money will attract. It aims to create growth and jobs, tackle societal challenges and reinforces Europe's international competitiveness.

In the context of tighter budgets and more public attention to the effectiveness of public funding and EU-funded research, there is a need to demonstrate the performance, impact and added value of EU programmes.

Horizon 2020 marks a shift towards the use of indicators that aim to capture results and impacts. While the focus of evaluation under past EU Framework Programmes for research has primarily been on analysing participant characteristics, R&D inputs and EU-funded project outputs, the emphasis under Horizon 2020 is to assess its impact on Europe's scientific and technological performance and research capacity and more widely on the European economy and society.

Monitoring generates data on an intervention's activity and impact over time in a continuous and systematic way. It helps identify and address any implementation problems of an intervention at the same time as it generates factual data for future evaluation and impact assessment.

Evaluation takes a broader look at all aspects of performance, looking more at "whether" the changes and any movement towards the set objectives are due, at least in part, to the intervention and "why" an intervention has been more or less successful in achieving its policy objectives. It looks at what has happened, why something has occurred and in particular how much has changed as a consequence.

1.1 Specific challenges for Horizon 2020

Integration of a wide range of activities into a common assessment system
Compared with previous EU framework programmes for research, the scale and scope of Horizon 2020 has been substantially expanded. It encompasses a wide spectrum of diverse funding activities. Moreover, Horizon 2020 foresees funding along the entire value chain, from fundamental research through to market uptake.

Assessing wider impact with reliable indicators
Assessing the impact of Horizon 2020 on growth and jobs through indicators at project and programme level, including in terms of its efficiency and quality, is a challenge. Reliable indicators of results and impacts are limited, the importance of individual indicators varies by discipline and sector, and there can be a considerable time lag between inputs and outputs.

It is important to make a distinction between different categories of impact.

- **Outputs** are what is directly produced or supplied through the EU intervention. They often relate to the expected deliverables of the intervention. Outputs generally occur within the short to medium term.

- **Results** capture more direct, short to medium term changes in a situation.

- **Impact** broadly defines the wider societal, economic or environmental cumulative changes over a longer period of time.

- **Indicators** are defined as the measurement of an objective to be met, a resource mobilised, an effect obtained or a context variable.

- **Output indicators** relate to the specific deliverables of the intervention.

- **Result indicators** represent the immediate effects of the measure concerned and look at its direct addressees.

- **Impact indicators** represent what the successful outcome should be in terms of impact on the economy/society beyond those directly affected by the intervention.

Despite this complexity, the Horizon 2020 indicators will deliver information on outputs and results across all areas of the programme. They will provide the basis for analysing the nature and scale of impact of Horizon 2020 on the European research and innovation system and how Horizon 2020 has contributed to building a society and an economy based on knowledge and innovation across the Union by leveraging additional research, development and innovation funding.

INDICATORS IN HORIZON 2020

2.1 Indicators and monitoring information

The legal basis of Horizon 2020[1] specifies a list of compulsory Key Performance Indicators to be taken into account in its evaluation and monitoring system. The fact that for the first time these Key Performance Indicators are identified prior to the start of the Framework Programme is a significant development as this provides a solid and coherent basis for the monitoring and evaluation system for Horizon 2020, coupled with the focus on measuring results and impacts of the Programme.

In addition, the legal basis indicates a list of 14 cross-cutting issues that serve to monitor on an annual basis Horizon 2020 programme implementation and which are reported in the Annual Horizon 2020 Monitoring Report.

The full set of Key Performance and Cross-Cutting Issues Indicators for Horizon 2020, including those for the European Institute of Technology and EURATOM are set out in Tables 1-4 below. In establishing the data that will be gathered to measure these indicators, it has been necessary to take into account the level of detail required to assess economic and societal impact while avoiding an undue reporting burden on Horizon 2020 beneficiaries.
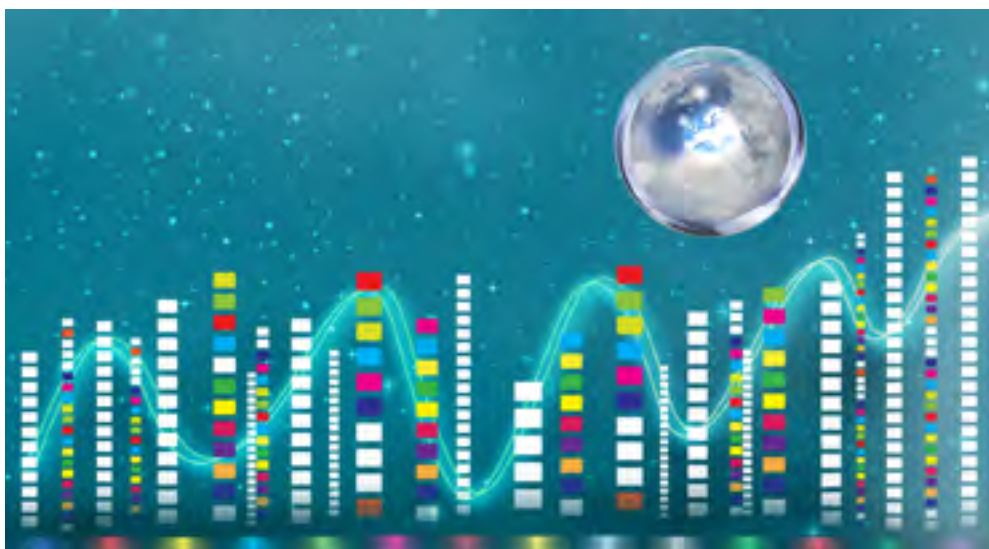
2.2 Key Performance Indicators

Table 1 provides an overview of the Key Performance Indicators for Horizon 2020 and defines the data that will be used to measure each indicator, as well as the baseline and the target.

As these performance indicators are focussed on assessing the impact of Horizon 2020, they will be based on information provided in the periodic and final reports of projects, so substantial data for them will only become available in the later stages of Horizon 2020. For some indicators, ex-ante assessments at the proposal evaluation stage may be used to provide provisional information at an earlier stage.

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[1] Horizon 2020 – Regulation of the European Parliament and of the Council (no. 1291/2013),
http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/fp/h2020-eu-establact_en.pdf

2.3 Indicators to monitor Horizon 2020 cross-cutting issues

While the performance indicators described above focus on the results and impact of the programme and will thus be of particular relevance for the mid-term and ex-post evaluations of Horizon 2020, a wide range of data linked to programme implementation will be collected for annual programme monitoring purposes.

In particular, the legal basis for Horizon 2020 includes an obligation to carry out an annual monitoring of Horizon 2020 addressing a list of 14 cross-cutting issues. These issues relate to specific policy initiatives, such as the European Research Area, general policy concerns, such as Climate Change, and implementation aspects. These cross-cutting issues, together with the specific indicators which will be used to monitor them, including the type of data required, are presented in Table 2.

Defining impact indicators in this cross-cutting manner should make it easier to assess the long-term wider impact of research and innovation funding.

2.4 European Institute of Innovation and Technology (EIT) Key Performance Indicators

The European Institute of Innovation and the Technology (EIT) plays an important role in achieving the Horizon 2020 objective of integrating the knowledge triangle of higher education, research and innovation.

To ensure the coherence of the evaluation of different activities under Horizon 2020, Table 3 provides the EIT Key Performance Indicators as currently deployed in the EIT Performance Measurement System (PMS). It defines each indicator and specifies the type of data required.

Key Performance Indicators have been designed to measure the fulfilment of selected EIT strategic objectives over a specific period of time. This will contribute to the continuous adaptation of the strategy and operations of Knowledge and Innovation Communities (KICs). The EIT adapts its monitoring provisions on a regular basis in order to reflect the growing number of KICs and their different stages of development.

2.5 Indicators and monitoring information on Research and Training Programme of the European Atomic Energy Community (EURATOM)

The activities of the Euratom Research and Training Programme 2014-2018 (EURATOM) fall under the Rules for Participation and Dissemination of Horizon 2020. The Euratom Programme is therefore integrated in the evaluation, monitoring, exploitation and dissemination processes of Horizon 2020. This will allow the Commission to report to the Council and Parliament in a coherent and effective manner on the activities of the Programme.

Table 4 of this document provides an overview of 12 Euratom Performance Indicators as laid down in the Euratom Regulation and specifies the type of data required as well as the baseline and the target.

TABLE 1: Horizon 2020 Key Performance Indicators

	#	Key performance indicator[2]	Definition of the indicator	Type of data required	Baseline at the start of Horizon 2020 (latest available)[3]	Target at the end of Horizon 2020
EXCELENT SCIENCE	1	ERC – Percentage of publications from ERC funded projects which are among the top 1 % highly cited	The index of ERC funded publications that are among the top 1% highly cited publications	Publication metadata from ERC funded projects and benchmark data on publications among top 1 %	[new approach under Horizon 2020][4]	1.8[5]
	2	FET – Publications in peer-reviewed high impact journals	The percentage of publications published in the top 10% impact ranked journals at FET level	Publications from FET funded projects (DOI: Digital Object Identifiers); Journal impact benchmark (ranking) data to be collected by commercially available bibliometric databases	[new approach under Horizon 2020]	25 publications per €10 million funding
	3	FET – Patent applications and patents awarded in Future and Emerging Technologies	Number of patent applications; Number of awarded patents at FET level	Patent application number; Awarded patent number	[new approach under Horizon 2020]	1 patent application per €10 million funding
	4	Marie Skłodowska-Curie actions – Cross-sector and cross-country circulation of researchers, including PhD candidates	Number of researchers undertaking international mobility under the Marie Skłodowska-Curie actions. Number of researchers undertaking mobility between academic and non-academic sectors	Nationality and gender of the researcher; country of origin of the researcher; country, legal status and activity type of the host organisation, legal status and activity type of the employing organisation prior to the Marie Skłodowska-Curie actions. Enrolment of a researcher in a PhD programme	50,000 researchers (2007-2013), out of which 20% PhD	65, 000 researchers (out of which 25,000 PhD candidates)

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[2] The legal basis for Horizon 2020 Key Performance Indicators is Annex II of the Council Decision 2013/743/EU.

[3] Unless otherwise specified, the baseline refers to FP7.

[4] New approach under Horizon 2020 means that the indicator was not used for FP7, therefore it is not possible to indicate a baseline.

[5] 1.8 is an index which represents the number of ERC acknowledged articles in the world's top 1% of highly cited articles, divided by the total number of world's top 1% highly cited articles, in the citing year.

	#	Key performance indicator[2]	Definition of the indicator	Type of data required	Baseline at the start of Horizon 2020 (latest available)[3]	Target at the end of Horizon 2020
EXCELENT SCIENCE	5	Research Infrastructures – Number of researchers who have access to research infrastructures through support from Horizon 2020	5.1 Number of researchers who have physical or remote access to research infrastructures 5.2 Number of researchers who have access to research e-infrastructures (Number of actual users divided by maximum possible number)	Nationality and gender of the researcher; country of origin of the researcher; country, legal status and activity type of the employing organisation	22, 000 researchers during FP7[6]	20, 000 additional researchers during Horizon 2020
INDUSTRIAL LEADERSHIP	6	LEIT[7] – Patent applications and patents awarded in the different enabling and industrial technologies	Number of patent applications by theme; Number of awarded patents by theme	Patent application number, Awarded patent number	[new approach under Horizon 2020]	3 patent applications per €10 million funding
	7	LEIT – Percentage of participating firms introducing innovations new to the company or to the market (covering the period of the project plus three years)	The percentage of private companies introducing innovations in the total number of project participants validated as private companies	Self-reporting (yes/no) of participating firms, based on a common definition of "innovations new to the company or the market"	[new approach under Horizon 2020]	[To be developed on the basis of first Horizon 2020 results]
	8	LEIT – Number of joint public-private publications	Number and percentage of joint public-private publications out of all LEIT publications	Data on joint publications coming from public and private project participants in LEIT funded projects (DOI: Digital Object Identifiers)	[new approach under Horizon 2020]	[To be developed on the basis of first Horizon 2020 results]
	9	Risk Finance – Total investments mobilised via debt financing and Venture Capital investments	Total investments mobilised via Venture Capital investments	Aggregate amount(s) in € of total investments made by legal entities benefiting from support provided by Horizon 2020 Equity Facility	[new approach under Horizon 2020]	€25 billion for both actions

[6] The baseline and target for this indicator refer only to access to research infrastructures (not including e-infrastructures).
[7] LEIT – Leadership in enabling and industrial technologies.

	#	Key performance indicator[2]	Definition of the indicator	Type of data required	Baseline at the start of Horizon 2020 (latest available)[3]	Target at the end of Horizon 2020
INDUSTRIAL LEADERSHIP	10	Risk Finance – Total investments mobilised via debt financing and Venture Capital investments	Total investments mobilised via debt financing	Aggregate amount(s) in € of total investments made by legal entities benefiting from support provided by Horizon 2020 debt Facility	[new approach under Horizon 2020]	€25 billion for both actions
	11	Risk Finance – Number of organisations funded and amount of private funds leveraged	Number of organisations funded; Amount of private funds leveraged	Number of legal entities benefiting from support provided by Horizon 2020 debt and Equity Financial Instruments	[Number of organisations funded: 300]	5, 000 organisations funded and €35 billion of private funds leveraged
	12	SME – Percentage of participating SMEs introducing innovations new to the company or the market (covering the period of the project plus three years)	Number and % of participating SMEs that have introduced innovations to the company or to the market	Number of SMEs that have introduced innovations	[new approach under Horizon 2020]	50%
	13	SME – Growth and job creation in participating SMEs	Turnover of company, Number of employees	Turnover of company, number of employees	[new approach under Horizon 2020]	to be developed based on FP7 ex-post evaluation and /or first Horizon 2020 project results
SOCIETAL CHALLENGES	14	Societal Challenges – Publications in peer-reviewed high impact journals in the area of the different Societal Challenges	The percentage of publications published in the top 10% impact ranked journals by subject category	Publications from relevant funded projects (DOI: Digital Object Identifiers); Journal impact benchmark (ranking) data to be collected by commercially available bibliometric databases	[new approach under Horizon 2020]	[On average, 20 publications per €10 million funding (for all societal challenges)]

	#	Key performance indicator[2]	Definition of the indicator	Type of data required	Baseline at the start of Horizon 2020 (latest available)[3]	Target at the end of Horizon 2020
SOCIETAL CHALLENGES	15	Societal Challenges – Patent applications and patents awarded in the area of the different Societal Challenges	Number of patent applications by theme; Number of awarded patents by theme	Patent application number	[new approach under Horizon 2020]	On average, 2 per €10 million funding (2014 – 2020)
	16	Societal Challenges – Number of prototypes and testing activities	Number of prototypes, testing (feasibility/ demo) activities, clinical trials	Reports on prototypes, and testing activities, clinical trials	[new approach under Horizon 2020]	[To be developed on the basis of first Horizon 2020 results]
	17	Societal Challenges – Number of joint public-private publications	Number and percentage of joint public-private publications out of all relevant publications	Properly flagged publications data (DOI) from relevant funded projects	[new approach under Horizon 2020]	[To be developed on the basis of first Horizon 2020 results]
	18*	New products, processes, and methods launched into the market	Number of projects with new innovative products, processes and methods	Project count and drop down list allowing to choose the type processes, products and methods	[new approach under Horizon 2020]	[To be developed on the basis of first Horizon 2020 results]
	19*	Percentage of the overall Energy challenge funds allocated to the following research activities: renewable energy, end user energy-efficiency, smart grids and energy storage activities	Percentage of the overall Energy challenge funds allocated to the following research activities: renewable energy, end user energy-efficiency, smart grids and energy storage activities	Financial data related to the funds allocated to the mentioned activities under Societal Challenge "Secure, clean and efficiency energy"	[new approach under Horizon 2020]	85%
SEWP	20*	Spreading Excellence and Widening Participation – Evolution of the publications in high impact journals in the given research field	Evolution (compared to a reference period prior to the signature of the grant agreement) of the publications in high impact journals in the given research field of the research organisation funded (ERA-Chair and Twinning activities)	Publications from relevant funded projects (DOI:Digital Object Identifiers); Journal impact benchmark (ranking) data to be collected by commercially available bibliometric databases	[new approach under Horizon 2020]	[To be determined at the occasion of Horizon 2020 interim evaluation in 2017]

	#	Key performance indicator[2]	Definition of the indicator	Type of data required	Baseline at the start of Horizon 2020 (latest available)[3]	Target at the end of Horizon 2020
SWAFS	21*	Science with and for Society– Number of institutional change actions promoted by the programme	Percentage of research organisations funded implementing actions to promote Responsible Research and Innovation, and number of institutional change measures adopted as a result	Number of occurrences of actions to promote institutional change towards Responsible Research and Innovation at Member State-level, at RPO-level and at individual scientist level	[new approach under Horizon 2020]	[To be determined at the occasion of Horizon 2020 interim evaluation in 2017]
JRC	22	JRC -Number of occurrences of tangible specific impacts on European policies resulting from technical and scientific support provided by the Joint Research Centre	The 'number of occurrences of impacts' is one of the results of the (annual) JRC Periodic Action Review	Number of publications	[211 (according to the PS)]	2017:220 2020:230 (both values from PS)
	23	JRC – Number of peer reviewed publications in high impact journals	Number of peer-reviewed publications with JRC authors listed in the ISI SCI-exp and/or SSCI in a given year	Number of publications	463 (2013)	2017:480 / 2020:500 (both values from PS)

NOTES:

18* This indicator is not a legally compulsory one, but it covers several additional specific indicators requested for more societal challenges by the services in charge.

19* This indicator is not mentioned in the Annex II of the Council Decision, but it was added as specific indicator for Societal Challenge "Secure, clean and efficiency energy" as the target was mentioned in the Horizon 2020 legal basis as compulsory.

20* This indicator is not mentioned in the Annex II of the Council Decision, but, as SEWP was introduced as a specific objective of Horizon 2020 during the negotiations, the Commission has to provide a performance indicator also for this objective.

21* This indicator is not mentioned in the Annex II of the Council Decision, but ,as SWAFS was introduced as a specific objective of Horizon 2020 during the negotiations, the Commission has to provide a performance indicator also for this objective.

TABLE 2: Indicators for monitoring Horizon 2020 Cross-Cutting Issues

#	Cross-cutting issue[8]	Definition of the indicator	Type of data required
1	Contribution to the realisation of the European Research Area	1.1 Annual number of research positions advertised on EURAXESS Jobs	Number of research positions advertised in Euraxess Jobs
		1.2 Number of national research infrastructures networked (in the sense of being made accessible to all researchers in Europe and beyond through support from Horizon 2020)	Number of national research infrastructures networked (in the sense of being made accessible to all researchers in Europe and beyond through support from Horizon 2020)
		1.3 Number and percentage of Open access articles published in peer-reviewed journals	Confirmation by beneficiaries about the open access nature of papers, based on list provided by OpenAIRE
		1.4 Number of projects that make scientific data accessible and re-usable and number of scientific datasets made accessible and re-usable	Project and datasets count, distinguishing "accessible" and "re-usable"
		1.5 Number of Multiannual Implementation Plans adopted by Joint Programming Initiatives	Number of Multiannual Implementation Plans adopted by Joint Programming Initiatives
2	Widening participation	2.1 Total number of participations by EU-28 Member State	Nationality of Horizon 2020 applicants & beneficiaries
		2.2 Total amount of EU financial contribution by EU-28 Member State (€ millions)	Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution
3	SMEs participation	3.1 Percentage of EU financial contribution going to SMEs (Enabling & industrial tech and Part III of Horizon 2020)	Horizon 2020 beneficiaries flagged as SME; EU contribution to Horizon 2020 beneficiaries
		3.2 Percentage of EU financial contribution committed through the SME instrument (Enabling & industrial tech and Part III of Horizon 2020)	EU financial contribution committed through the SME instrument
4	Social sciences and humanities	4.1 Percentage of SSH partners in selected projects in all Horizon 2020 priorities and percentage of EU financial contribution allocated to them	Projects properly flagged [the SSH follow the Horizon 2020 definition]
5	Science and Society (Responsible Research and Innovation)	5.1 Percentage of projects where citizens, Civil Society Organisations (CSOs) and other societal actors contribute to the co-creation of scientific agendas and scientific contents	CSOs identified in PDM / proposal submission 'Other societal actors' identified in PDM as natural persons

8 The legal basis for monitoring Horizon 2020 Cross-Cutting Issues Indicators is Annex III – Council Decision 2013/743/EU.

#	Cross-cutting issue[8]	Definition of the indicator	Type of data required
6	Gender	6.1 Percentage of women participants in Horizon 2020 projects	Gender of participants in Horizon 2020 projects
		6.2 Percentage of women project coordinators in Horizon 2020	Gender of MSCA fellows, ERC principal investigators and scientific coordinators in other Horizon 2020 activities
		6.3 Percentage of women in EC advisory groups, expert groups, evaluation panels, individual experts, etc.	Gender of members of advisory groups, panels, etc.
		6.4 Percentage of projects taking into account the gender dimension in research and innovation content	Projects properly flagged
7	International cooperation	7.1 Percentage of third-country participants in Horizon 2020	Nationality of Horizon 2020 beneficiaries
		7.2 Percentage of EU financial contribution attributed to third country participants	Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution
		7.3 Percentage of budget of topics in the WP mentioning at least one third country or region	Budget figures by topic
8	Sustainable development and climate change, including information on the amount of climate change related expenditure	8.1 Percentage of EU financial contribution that is climate-related in Horizon 2020 calculated on the basis of the "RIO markers" methodology developed by OECD, distinguishing: expenditure-related outputs where climate is the principal (primary) objective to be counted as 100% climate related; expenditure-related outputs where climate is a significant, but not predominant, objective to be counted as 40% climate related; expenditure not targeted to climate objectives to be counted as 0% climate related	Budget figures by topic for top-down activities; For "bottom-up" topics: budget allocated to retained proposals
		8.2 Percentage of EU financial contribution that is sustainability-related in Horizon 2020, calculated on the basis of the " RIO markers" methodology developed by OECD	Budget figures by topic for top-down activities; For "bottom-up" topics: budget allocated to retained proposals
		8.3 Percentage of EU financial contribution that is biodiversity-related in Horizon 2020 (EUR), calculated on the basis of the "RIO markers" methodology developed by OECD	Budget figures by topic for top-down activities; For "bottom-up" topics: budget allocated to retained proposals

#	Cross-cutting issue[8]	Definition of the indicator	Type of data required
9	Bridging from discovery to market application	9.1 Percentage of projects and EU financial contribution allocated to innovation actions in Horizon 2020	Proposals and projects properly flagged ; Topics properly flagged in the WP; follow-up at grant level
		9.2 Within the innovation actions, percentage of EU financial contribution focussed on demonstration and first-of-a-kind activities	Topics properly flagged in the WP; follow-up at grant level
10	Digital Agenda	10.1 Percentage of EU financial contribution that is ICT Research & Innovation related in Horizon 2020 (EUR), calculated on the basis of the "RIO markers" methodology developed by OECD: • Expenditure for topics/projects where ICT R&I is the principal (primary) objective to be counted as 100% ICT related; • Expenditure for topics/projects where ICT R&I is a significant (secondary), but not predominant objective to be counted as 40% ICT related; • Expenditure for topics/projects not targeted to ICT R&I objectives to be counted as 0% ICT related. Note: ICT Innovation is defined as "ICT and ICT-enabled new products, services or processes within and outside the ICT sector"	• For "top-down" topics: budget figures by topic • For "bottom-up" topics: budget allocated to retained proposals Note: *"Top-down" topics are topics for which markers can be allocated on the basis of the Work Programme. "Bottom-up" topics are topics for which it is not possible to allocate ICT R&I marker on a topic basis*
11	Private sector participation	11.1 Percentage of Horizon 2020 beneficiaries from the private for profit sector	Horizon 2020 beneficiaries classified by type of activity and legal status
		11.2 Percentage of EU financial contribution going to private for profit entities (Enabling & industrial tech and Part III of Horizon 2020)	Horizon 2020 beneficiaries classified by type of activity; corresponding EU contribution
12	Funding for PPPs and P2Ps	12.1 EU financial contribution for PPP-P2Ps	EU contribution to PPP-P2Ps
		12.2 PPPs leverage: total amount of funds leveraged through Art. 187 initiatives, including additional activities, divided by the EU contribution	Total funding made by private actors involved in PPPs
		12.3 P2P leverage: total amount of funds leveraged through Art. 185 initiatives	Total public funds integrated in the Art. 185 initiative; total public funds in the specific sector

#	Cross-cutting issue[8]	Definition of the indicator	Type of data required
13	Communication and dissemination	13.3 Dissemination and outreach activities other than peer-reviewed publications - [Conferences, workshops, press releases, publications, flyers, exhibitions, trainings, social media, web-sites, communication campaigns (e.g. radio, TV]	A drop down list allows the choice of the type of dissemination activity. Number of events, funding amount and number of persons reached thanks to the dissemination activities
14	Participation patterns of independent experts	14.2 Proposal evaluators by country	Nationality of proposal evaluators
		14.3 Proposal evaluators by organisations' type of activity	Type of activity of evaluators' organisations

Note:
* Horizon 2020 applicants - all those who submitted Horizon 2020 proposals

* Horizon 2020 beneficiaries - all those who have signed a Horizon 2020 Grant Agreement

* Responsible Directorate - DG RTD Directorates and R&I DGs family in charge with management of Horizon 2020 activities

* Services –Executive Agencies and other external bodies in charge with Horizon 2020 activities

* Project officer - is in charge of managing Horizon 2020 projects in Responsible Directorate/Service including Executive Agencies

Table 3: Key Performance Indicators for EIT European Institute of Innovation and Technology

N°	Key performance indicator[9]	Definition of the indicator	Type of data required
1	Organisations from universities, business and research integrated in the Knowledge and Innovation Communities (KICs)	The number of organisations (universities, business and research) integrated in Knowledge and Innovation Communities ('KICs')	The number of organisations integrated in Knowledge and Innovation Communities ('KICs')
2	Number of new graduates	Number of new graduates from EIT-labelled PhD and Masters programmes[10]	Number of new graduates from EIT labelled PhD and Masters programmes.
3	Number of business ideas incubated	Number of formalised commitments[11] established between KICS and entrepreneurs	Number of formalised commitments established between KICS and entrepreneurs
4	Knowledge Transfer/ Adoption	Sum of the Knowledge Transfers and Adoptions[12]	Sum of the Knowledge Transfers and Adoptions
5	New or improved products/services/ processes launched onto the market	Number of new or improved products/services/processes[13] that are direct output of a KIC Activity	Number of new or improved products/services/processes that are direct output of a KIC Activity
6	Attractiveness of education programs	Ratio of the number of eligible applicants[14] for EIT-labelled PhD and Master programs divided by number of available seats for EIT-labelled PhD and Master programs	Ratio of the number of eligible applicants for EIT labelled PhD and Master programs divided by number of available seats for EIT labelled PhD and Master programs
7	Number of start-ups and spin-offs created	Number of Start-Ups and Spin-Offs that are direct output of a KIC Activity[15]	Number of Start-Ups and Spin-Offs that are direct output of a KIC Activity

Note:

[9] The legal basis for Horizon 2020 Key Performance Indicators for the EIT is Art. 7A of the Council Regulation 1292/2013.

[10] For each of the EIT labelled PhD and Master programs, a graduate is counted if he/she successfully completes the given programme in the associated year.

[11] This document should clearly state the commitments that the venture is accepting and if applicable what the venture gives in exchange.

[12] Two main numbers will be generated: a number of knowledge adoptions (by KIC partners) that are output of a KIC activity; and a number of knowledge transfers (from one KIC partner to another KIC partner or to third parties) that are output of a KIC activity.

[13] The new or improved product/service/process must be acknowledged by a first commercial transaction (e.g. an invoice) or proof of demonstration of the added value to the customer. The originating party for both new and improved products/ services/processes shall be a KIC Partner, a KIC Legal Entity or a KIC start-up (for this latter only as from its second year of operations).

[14] Eligible candidates who have submitted a formalised application matching the requirements criteria to enter into the selection process in the associated year.

[15] The start-up: must be legally incorporated according to national law of an EU Member State; must have won its first customer(s) or demonstrate the existence of a potential first customer or investor (for example by a Letter of Intent); must fulfil either one of the following conditions: it has been coached / incubated within a KIC or it is a spin out arising as direct output of a KIC activity.

Table 4: Key Performance Indicators for the Research and Training Programme of the European Atomic Energy Community (2014–2018)

N°	Key performance indicator[16]	Definition of the indicator	Type of data required	Baseline at the start of programme (latest available)	Target at the end of 2018
1	The number of projects (joint research and/or coordinated actions) likely to lead to a demonstrable improvement in nuclear safety practice in Europe	This indicator allows assessment of the extent to which Euratom Programme contribute to the improvement in nuclear safety practice in Europe	Number of projects in the area of nuclear safety	41 (within the period 2007-2013)	2018: 14 (cumulative indicator)
2	The number of projects contributing to the development of safe long term solutions for the management of ultimate nuclear waste	This indicator allows assessment of the extent to which Euratom projects contribute to the development of safe long term solutions for the management of ultimate nuclear waste	Number of projects contributing to the development of safe long term solutions in the field of ultimate nuclear waste	15 (within the period 2007-2013)	8 (cumulative indicator)
3	The number of PhD students and postdoctoral researchers supported through the Euratom fission projects	This indicator measures the number of PhD students and postdoctoral researchers supported through the Euratom fission projects	Number of PhD students and postdoctoral researchers supported through the Euratom fission projects	200 (Euratom, within the period 2007-2013)	1000 (cumulative indicator)
4	The number of fellows and trainees in the Euratom fusion programme	This indicator measures the number of fellows (Post Doctorial level or equivalent) and Goal Oriented Trainees (GOT, mainly engineers) supported by the Euratom Research and Training Programme through a European Joint Programme (EJP) Co-fund action	Number of fellows and trainees in the Euratom fusion programme; Number of fellows selected for training in a given year Number of GOT trainees selected for training in a given year	27 per year (within the period of 2007-2013)	50 average per year

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[16] The legal basis for Horizon 2020 Key Performance Indicators for the Research and Training Programme of the European Atomic Energy Community (2014-2018) is Annex II of the Council Regulation EURATOM 1314/2013.

N°	Key performance indicator[16]	Definition of the indicator	Type of data required	Baseline at the start of programme (latest available)	Target at the end of 2018
5	The number of projects likely to have a demonstrable impact on regulatory practice regarding radiation protection and on the development of medical applications of radiation	This indicator measures the number of projects contributing to the regulatory practice regarding radiation protection and to the development of medical applications of radiation	Number of projects with a demonstrable impact on regulatory practice with regard to radiation protection Number of projects in the area of development of medical applications of radiation	33 (within the period of 2007-2013)	25
6	The number of publications in peer-reviewed high impact journals	This indicator measures the number of publications in peer-reviewed high impact journals in fusion research prepared by members of the EUROfusion consortium	Number of publications in peer-reviewed high impact journals from fusion programme	800	800 in average per year
7	The percentage of the Fusion Roadmap's milestones, established for the period 2014-2018, reached by the Euratom Programme	This indicator measures progress made in implementation of the fusion roadmap	Cumulative % of the EUROfusion high level deliverables achieved, established for the period 2014-2018 for the implementation of the Fusion Roadmap	New approach	90% including a report on Fusion Power Plant Conceptual design activities
8	The number of spin-offs from the fusion research under the Euratom Programme	This indicator measures number of technology transfers made from the Fusion programme to industry	Cumulative number of spin offs	4 (within the period 2007-2013)	10 (cumulative indicator)
9	The patents applications generated on the basis of research activities supported by the Euratom Programme	This indicator measures the number of patent applications submitted by the members of the EUROfusion consortium and by the members of the fission projects' consortia	Cumulative number of patent applications emerging from fission projects and EUROfusion Consortium	3	4 patent applications

N°	Key performance indicator[16]	Definition of the indicator	Type of data required	Baseline at the start of programme (latest available)	Target at the end of 2018
10	The patents awarded on the basis of research activities supported by the Euratom Programme	This indicator measures the number of patent patents awarded to the members of the EUROfusion consortium and to the members of the fission projects' consortia	Cumulative number of patent awarded to the members of the EUROfusion consortium and to the members of the fission projects' consortia	New approach	20 (within the period 2014-2018)
11	The number of researchers having access to research infrastructures through Euratom Programme support	This indicator measures the number of researchers who have physical access to research infrastructures (fusion and fission) through Euratom Programme support	Overall number of researchers who have physical access to research infrastructures through Euratom support Number of researchers who have access to fusion research infrastructures through Euratom support Number of researchers who have access to fission research infrastructures through Euratom support	800	1200
12	Percentage of Euratom's obligations discharged by the ITER Organisation (IO) through the Joint Undertaking F4E	This indicator measures progress in the Euratom contribution to ITER construction according to credits granted by ITER IO to F4E.	Percentage of Euratom's obligations discharged by the ITER Organisation through the Joint Undertaking F4E Credits granted by ITER IO to F4E in year n Overall amount of Euratom contribution to ITER foreseen for 2014-2020 measured in IO credits	6% (2013)	2020: 70 %

HORIZON 2020 INFORMATION SYSTEM AND DATA SOURCES

Indicators are in the end all based on data, either sourced from third parties or collected through programme monitoring or participant surveys.

To ensure a comprehensive evaluation and reporting system for Horizon 2020, it is essential to have structured and reliable access to the relevant information sources. The wealth of data stemming from Horizon 2020, captured notably via the large CORDA database, has been expanded to ensure its full exploitation. This should make it possible to measure the direct and indirect contribution of Horizon 2020 projects and initiatives to competitiveness and growth.

3.1 Information technology environment supportive for dissemination and use of research results

The new information technology system to support the evaluation and reporting strategy for Horizon 2020 is a comprehensive data system, based on the integration of specific data sets. Various information systems, including websites, support the business processes involved in Horizon 2020 and previous research framework programmes. Together, they support the dissemination and use of research results. They are linked and work with common data. Within the Commission, the information technology tools in the system are as follows:

- SEP for submitting proposals (including plans for the dissemination and use of research results), and for evaluating and ranking them.

- CPM/SYGMA for monitoring funded projects during their entire life cycle, including capturing information and data on the dissemination and use of their results.

- CPM/SESAM/RESPIR for reports, deliverables and data on dissemination and use of the results of research carried out under each concluded FP7 project. It has to be taken into account that data on results supplied by beneficiaries is not always perfect.

- CORDA as the overall warehouse for structured data, tapping into the previous systems. CORDA is the internal data warehouse for Commission users. It is also used to inform Member States about their participation in the framework programmes through the related e-CORDA platform.

Digital links between RESPIR and other databases (of science publications and patents) may help participants in recording results and to interpret the data.

Three mutually complementary systems, address different audiences with specifically tailored services:

- CORDIS is organised in cooperation with the Publications Office of the European Union. In 1994, the Commission pioneered multilingual dissemination with the creation of the CORDIS portal, the first website of the European institutions. CORDIS is the Commission's primary public repository and multilingual portal to disseminate information on all EU-funded research projects and their results. It includes 100,000 projects dating back to the First Framework Programme. CORDIS offers public service information on EU-funded projects by disseminating publishable versions of intermediate and final reports and multilingual 'Results in Brief' written by scientific journalists (currently available in six languages). In order to expand the reporting capabilities, further developments of CORDIS' functionalities are being explored, such as digitally linking projects to publications and patents.

- OpenAIRE is an open repository and portal for data and information related to research projects funded through a wide range of programmes. It stores millions of projects, research data sets and publications, and its coverage goes well beyond EU programmes.

- The EU Open Data Portal (operated by the Publications Office) makes accessible thousands of sets of data and information from the Commission and other EU institutions.

3.2 Future orientations

Until now, reporting has focused in the main on input information in relation to projects launched and funding granted.

However, to address the significant need to report on the impact of research and innovation investment, equal attention will be paid to information on results to develop a clear picture of the number of completed projects, the fields to which these relate, what they delivered and what steps have been taken regarding exploitation of research results.

3.3 Conclusion

The Commission will report on these indicators in its Annual Monitoring Reports and they will feed into the evaluations of Horizon 2020. Maximising the potential of these indicators requires a concerted and sustained commitment from all stakeholders, including project participants, research and innovation actors, as well as Member States and Associated and third countries.

Useful links

Participant Portal: *http://bit.ly/H2020PP*
Learn more about Horizon 2020: *http://ec.europa.eu/horizon2020*
National contact Points (NCPs): *http://bit.ly/H2020NCP*
Evaluation and Monitoring: *http://ec.europa.eu/research/evaluations/index_en.cfm*
Register as an expert: *http://bit.ly/H2020Experts*

GLOSSARY

Art.185 initiatives	Art. 185 TFEU initiatives foresee the participation of the EU in the joint implementation of (parts of) research and development national programmes.
Art.187 initiatives	Art.187 TFEU initiatives refer to Joint Technology Initiatives which are long-term Public-Private Partnerships and are managed within dedicated structures.
Baseline	Baseline data refer to the initial value against which an indicator is subsequently measured.
CCM2	Call & codes modules coordination
CORDA	Common Research Data Warehouse
E-CORDA	CORDA External
CORDIS	Community Research and Development Information Service for Science
CPM	Contract and Project Management
CSO	Civil Society Organisation
DOI	Digital Object Identifiers
EIB	European Investment Bank
EIF	European Investment Fund
EIT	The European Institute of Innovation and Technology
EIT/PMS	The European Institute of Innovation and the Technology Performance Measurement System
EJP	European Joint Programme
EPO	European Patent Office
ERA	European Research Area
ERC	European Research Council
EURATOM	Research and Training Programme of the European Atomic Energy Community
EURAXESS Researchers in Motion	Pan-European initiative providing access to a complete range of information and support services to researchers wishing to pursue their research careers in Europe or stay connected to it.
ESPACENET	A free online service for searching patents and patent applications developed by the European Patent Office (EPO) together with the member states of the European Patent Organisation.
Evaluation	Evaluation is defined as an evidence-based judgement of the extent to which an intervention has: (i) been effective and efficient; (ii) been relevant given the needs and its objectives; (iii) been coherent both internally and with other EU policy interventions; and (iv) achieved EU added-value.

F4E	Fusion for Energy European Joint Undertaking
FET	Future & Emerging Technologies
FP	Framework Programme for Research and Technological Development
GOT	Goal Oriented Trainees
HES	Higher or Secondary Education Organisation
ICT	Information and Communication Technologies
Impact	Impact broadly defines the wider societal, economic or environmental cumulative changes over a longer period of time.
Indicator	An indicator can be defined as the measurement of an objective to be met, a resource mobilised, an effect obtained, a gauge of quality or a context variable. An indicator should be made up by a definition, a value and a measurement unit.
Input	A material, human and/or financial resource directly used in the implementation of a policy intervention.
Intervention	Intervention is used as umbrella terms to describe a wide range of EU activities including: expenditure and non-expenditure measures, legislation, action plans, networks and agencies.
IPR	Intellectual Property Rights
ISI	Institute for Scientific Information
ITER	International Thermonuclear Experimental Reactor
JRC	Joint Research Centre
JTI	Joint Technology Initiative
JU	Joint Undertaking
KPI	Key Performance Indicator
KIC	Knowledge and Innovation Community
LEIT	Leadership in enabling and industrial technologies
Monitoring	Monitoring generates data on an intervention's activity and impact over time in a continuous and systematic way. It helps identify and address any implementation problems of an intervention at the same time as it generates factual data for future evaluation and impact assessment.
MSCA	Marie Skłodowska-Curie Action
OpenAIRE	A network of Open Access repositories, archives and journals that support Open Access policies.
Outcome	The direct, and usually observable, effect of a policy intervention on its target population, which is consistent with the policy intervention goals, and would not have occurred without the policy intervention.

Output	Outputs are what is directly produced or supplied through the EU intervention. They often relate to the expected deliverables of the intervention. Outputs generally occur within the short to medium term.
Patent	A set of exclusive rights granted by national authorities to an inventor for a limited period of time in exchange for a public disclosure of an invention which must be new, non-obvious, and useful or industrially applicable, usually excluding certain subject areas, such as business methods and mental acts. The exclusive right granted to a patentee in most countries is the right to prevent others from making, using, selling, or distributing the patented invention without permission.
PDM	Participant Data Management
PPP	Public Private Partnership
P2P	Public Public Partnership
PRC	Private for Profit Organisation
Programme	A set of organised but often varied activities (a programme may encompass several different projects, measures and processes) directed towards the achievement of specific objectives. Programmes have a definite time schedule and budget.
Project	A single, non-divisible public intervention directed towards the attainment of operational objectives, with a fixed time schedule and a dedicated budget.
PS	Programme Statement
R&D	Research and Development
REC	Research Organisation
RESULT	Results capture more direct, short to medium term changes in a situation.
RPO	Research Performing Organisation
RESPIR/ SESAM	Research Performance and Impact Reporting tool
RSFF	Risk Sharing Financial Facility
SCI	Science Citation Index
SEP	Submission & Evaluation of Proposals
SEWP	Spreading Excellence and Widening Participation
SME	SME is the abbreviation for micro, small and medium-sized enterprises (SMEs). SMEs are defined in Commission Recommendation 2003/361 as enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.
SJR	Journal Rank Indicator
Spin-off	A type of corporate transaction forming a new company or entity

SSCI	Social Sciences Citation Index
SSH	Socio-economic Sciences and Humanities
Stakeholder	Stakeholder is any individual or entity impacted, addressed or otherwise concerned by an EU intervention.
Start-up	A business in the form of a company, a partnership or temporary organization designed to search for a repeatable and scalable business model
SWAFS	Science with and for Society
SyGMa	System for Grant Management
Targets	The quantifiable levels of the indicator that a policy intervention intends to achieve at a given point in time.
WIPO	Search International and National Patent Collections
WP	Work Programme

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Horizon 2020 is the biggest EU research and innovation programme ever. Almost €80 billion of funding is available over seven years (2014 to 2020) – in addition to the private and national public investment that this money will attract.

The legal basis for Horizon 2020, the EU's research and innovation programme for 2014-2020, specifies a list of compulsory Key Performance Indicators to be taken into account in its evaluation and monitoring system. For the first time ever these Key Performance Indicators are identified prior to the start of the EU Framework Programme. This is a significant development as it provides a solid and coherent basis for the monitoring and evaluation system for Horizon 2020, coupled with the focus on measuring results and impacts of the Programme.

This publication presents the full set of Key Performance and Cross-Cutting Issues Indicators for Horizon 2020, including those for the European Institute of Technology and EURATOM, and describes the new information system and data sources which support the monitoring and evaluation strategy for Horizon 2020.

www.ec.europa.eu/horizon2020

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