



Guidelines for the new EU Framework Programme for Research and Innovation

Federal Government Position Paper

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Summary

Europe and the future of research and innovation funding¹

In recent years, European research and innovation funding (R&I funding) has demonstrated how transborder cooperation in Europe can benefit citizens. In these changing times, Europe must take advantage of this positive momentum in research and innovation to address the increasing political challenges we are facing at the global level. We must make improved use of research and innovation as drivers of sustainable development in European policy in fields such as environment, health, energy and agriculture, the digital economy, future mobility and the exploration and use of outer space. This will also serve the purpose of implementing the United Nations' 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs) as well as the Paris climate agreement. A new EU Framework Programme for Research and Innovation will make an important contribution to this effort.

The EU Member States' research and development policies provide the basis for R&I funding at European level. Joint action brings together strong national players from science, industry and society: horizontally, for example through transborder cooperation between researchers, and vertically through new forms of cooperation between science, industry and society. The large number of well-trained and motivated young people is one of Europe's strengths. These people design and represent Europe's future. We must make special efforts to foster their talent as young researchers who gain experience in different places throughout Europe or as young entrepreneurs who are changing the world by implementing their ideas. We must broaden our vision and consider the needs of citizens from the outset by developing adequate forms of public participation.

The results of European cooperation are evaluated using specific criteria that measure the success of European R&I policy and can thereby demonstrate European added value. European research and innovation funding must pursue a twofold objective: Scientific excellence and its translating it into value added, provided this cannot be achieved on the national level. European R&I funding must be of societal relevance for Europe and this relevance must be adequately communicated.

We are convinced that our approach towards developing a new EU Framework Programme for Research and Innovation (FP9) should be:

- **Bolder:** The programme must define priorities, avoid duplication and pool resources. At the same time, we must consistently build on the results of Horizon 2020 and other research activities. Initiatives of lesser European relevance should be discontinued and decisions in this matter should be closely coordinated with the Member States.
- **More focused:** We must identify those grand challenges for Europe which can only be addressed jointly, and we must specify the research and innovation objectives which require a joint effort.
- **More inclusive:** In our view, responsibility and ownership, partnership and solidarity go hand in hand. We therefore need a realistic, pragmatic and open approach which recognizes the different development levels of Member States, allows variable forms of cooperation and generally develops the EU's economic strengths while promoting unity in the Union.

¹ These guidelines do not refer to the European Union's defence research programme which should provide European added value, strengthening the research focus of the Common Security and Defence Policy and complementing research activities at national, binational/multinational, EU, EDA and NATO level.

Synergies between FP9 and other policy areas such as the European Structural and Investment Funds (ESIF) must be strengthened without impairing their different focuses.

- **More outcome-oriented:** The specific parameters for measuring the success of research and innovation funding under the EU Framework Programme must be identified jointly with the Member States.
- **More consistent:** The new R&I Framework Programme must be complementary to national efforts by the Member States – it must take them into account and supplement them. At the same time, it must form an integral part of an overarching modernizing approach across policy areas by the European institutions.
- **More user friendly:** The EU must improve its research and innovation funding to make it much quicker, more targeted and more user-friendly.
- **Closer to the people:** EU research and innovation funding must be part of a dialogue between science, industry, politics and society. The Member States must play a major role in shaping this dialogue.
- **More determined:** With a financial volume of roughly EUR 75 billion (2014-2020), Horizon 2020 is one of the world's largest programmes to support research and innovation. The budget of the successor programme will be decided in the negotiations on the next multiannual financial framework. Regardless of their result, we must do more to jointly ensure our global competitiveness in the future.

Requirements for the new EU Framework Programme for Research and Innovation

Germany promotes a Framework Programme that is based on excellence in order to strengthen research and innovation in Europe. The focus should continue to be on transborder and transdisciplinary cooperation which brings together the best European actors from science and industry and thus creates European added value.

The following elements are important to ensure the success of the future Framework Programme:

OBJECTIVES AND BASIC PRINCIPLES

- FP9 must be part of an overall strategy for EU research and innovation policy which addresses the R&I-related aspects of European policy priorities.
- Excellence-based research in Europe must be the guiding principle of FP9 and provides the necessary foundation for innovation activities under the programme.
- It is of key importance for European research and innovation funding that we identify societal needs and agree on strategically relevant European development goals (“missions”). This will make Europe even more successful in the global competition for the best technological solutions, the best products and services and social innovations.
- At the same time, we must ensure greater complementarity between the R&I funding instruments of FP9 and the ESIF to improve synergies. This would contribute to reducing differences as regards the development levels in Europe.
- Like its predecessor programmes, FP9 should focus exclusively on civilian activities. A European defence research programme should preferably be established as a separate research programme outside of FP9.
- FP9 must ensure seamless support from basic research to applied research to market-related activities. We have to succeed even better in translating knowledge into marketable products and services and are convinced that close cooperation between science, industry and society

and the involvement of regulatory authorities will help us accomplish that goal. Joint European funding must end where the actors in the innovation process can and should act on their own.

- FP9 must provide support not only for technological but also for non-technological and social innovations, thus addressing the societal implications of technological development and contributing to the conservation of natural resources.

STRATEGIC ORIENTATION

- The three-pillar structure of Horizon 2020 has generally proven successful. However, improvements are needed in the interaction between the pillars and regarding the coordination of individual activities.
- Successful approaches under Horizon 2020 should be continued: The European Research Council (ERC), the Marie Skłodowska-Curie actions and collaborative research projects are all successes.
- Key enabling technologies (KETs) provide important contributions to boosting the innovative power of European science and industry. A separate technology-oriented programme area on KETs should therefore also be included in FP9 to ensure Europe's future competitiveness.
- FP9 must provide opportunity for high-risk research as a basis for breakthrough innovations which can open up new markets.
- A European Innovation Council (EIC) should be established and could serve as an umbrella for a consolidated portfolio of European innovation funding instruments which mainly benefit companies. Support for SMEs and startups is particularly important in this context provided there is a European dimension to such support, i.e. it fosters transborder cooperation. A political target for SMEs (similar to that in Horizon 2020) should also be included in FP9.
- While avoiding the risks of innovation drain, FP9 must take advantage of the digital transformation and its potential to develop and open up the science and innovation process (e.g. open science, open innovation). "Missions" must be defined in the context of societal needs and the grand European and global challenges, including the United Nations' 2030 Agenda for Sustainable Development and the Paris climate agreement. The use of state-of-the-art technologies, particularly key enabling technologies, provide the basis for mission-oriented innovations.
- Europe's unity and the development of an open and democratic model of a European society are among the big global challenges Europe is facing. We need a debate about how these challenges can be addressed in the context of a mission-oriented research and innovation policy.
- Open international cooperation based on scientific expertise and common innovation goals will strengthen research and innovation in Europe. At the same time, we must safeguard European interests and ensure a level playing field for European actors from science, industry, politics and civil society at international level. Collaborations with third countries must take account of competition-related aspects and safeguard Europe's independence.
- An internationally competitive European innovation system depends not only on an excellent research system and excellent research infrastructures but also on a high-quality education system. This is why the European education, research and innovation policies must be linked more closely. FP9 is both the driver and important element of a strong European Higher Education and Research Area.

GOVERNANCE

- Consistent involvement of the Member States is necessary to define the strategic orientation of FP9 and its concrete design; furthermore, all programme modules should be evaluated regularly and conclusions should be drawn for future programmes. The rights of Member States in the programme committees must therefore be strengthened.
- Partnerships (of a public-public or public-private nature) should be developed further and used more effectively in order to create critical mass and accelerate structural change.
- Intergovernmental initiatives such as EUREKA and COST are an important component of the architecture of European research and innovation funding.

INSTRUMENTS AND SPECIFIC MEASURES

- The requirements of funding under FP9, including the expected impact, must be communicated more clearly and effectively and the focus of FP9 must be on topics with a high European added value so that oversubscription can be reduced and applicants can avoid as much as possible spending unnecessary personnel and financial resources.
- R&I grants should not be replaced by loan financing. Grants are the only acceptable funding instrument for public and non-profit institutions. Targeted use of loan funding may be appropriate to support market-related innovation. However, this should not exclude to more fully exploit the possibilities of EFSI and other EIB funding for R&I projects .
- European research and innovation funding must ensure the improved involvement of industry in research projects. The EIC should be established taking account of existing innovation instruments.
- The portfolio of instruments under Horizon 2020 must be reviewed and consolidated. The SME instrument must be refocused with a view to fostering European added value. Furthermore, consideration must be given to the question whether elements of the "Fast Track to Innovation" instrument can be applied to other areas (e.g. Time to Grant).
- The rules for participation must be further improved. The focus should be on increasing user friendliness and further reducing administrative effort for applicants and project participants.
- We are open to discuss an incentive-oriented reduction of funding for industrial partners (excluding SMEs) so that more businesses will be able to participate in the Framework Programme for Research and Innovation. This may reduce deadweight effects and enable the broader involvement of companies.

1. Europe and the future of research and innovation funding

Research and innovation in Europe represent the power, creativity, curiosity and willingness needed to use novel findings and technologies in renewed efforts to shape our future. They stand for the conviction that we must support the brightest minds in Europe in order to achieve the best results for Europe. Intellectual and physical mobility, the willingness to engage in open competition and orientation towards relevance and impact provide the basis for research and innovation. We want to maintain societal solidarity in our democratic system and the prosperity of European citizens, Europe's competitiveness and the conservation of our natural resources. Research and innovation in Europe are based on the awareness that we must be open to new approaches and prepared to share and pool our knowledge and resources.

These values which are part of our common experience reveal what we will increasingly need in the future: transborder European cooperation based on facts, excellence and relevance.

In recent years, European research and innovation funding has demonstrated how transborder cooperation in Europe can benefit citizens and safeguard their interests. In these changing times, we must take advantage of this positive momentum in the area of research and innovation to address the increasing challenges Europe is facing. We must make improved use of research and innovation as drivers of sustainable European development in fields such as energy, health, environment or agriculture, the digital economy, the exploration and use of outer space and other areas of European policy in order to strengthen Europe's future. This will also serve the purpose of implementing the United Nations' 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs) as well as the Paris climate agreement. A new EU Framework Programme for Research and Innovation will make an important contribution to this effort. Innovation in this context is a broadly defined concept which covers not only technological but also non-technological and social innovations and refers to discovery and transfer for improved value creation and the solution of societal challenges.²

The new products and services, the answers to future challenges and the knowledge we need to better understand our world will mainly be generated by research and innovation.

Horizon 2020 is the first European programme to systematically combine research and innovation funding and thus constitutes one of the world's largest and most successful funding programmes. We must build on this basis. The focus must now be on developing a productive and inspiring environment for research and innovation in Europe.

The EU Member States' research, development and innovation policies provide the basis for R&I funding at European level. Joint action brings together strong national players from science, industry and society: horizontally, through transborder cooperation between researchers, and vertically through new forms of cooperation between science, industry and society. The large number of well-trained and motivated young people is one of Europe's strengths. They design and represent Europe's future. We must make special efforts to foster their talent as young researchers who gain experience in different places throughout Europe or as young entrepreneurs whose ideas are changing the world. We must broaden our vision and consider the needs of citizens from the outset by developing adequate forms of public participation.³

European cooperation generates added value as the results can be measured using clear criteria for the success of European R&I policy. European research cooperation must pursue a twofold objective: Scientific excellence and its translation into added value, provided this cannot be

² This definition of innovation is based on the precautionary principle and applicable protection standards and describes new developments which contribute to reducing the risks for people and the environment. Innovation must not challenge the precautionary principle and the protection standards based on it.

³ Research and innovation funding activities must not discriminate against any citizens of the Union because of gender, race, colour, language, religion, political or other views, national or social origin, membership of a national minority or any other social features.

realized by mere national action. The purpose of European R&I funding must be of relevance for Europe and this relevance must be adequately communicated. After all, those partners in the Union who are engaged in research and innovation to a lesser extent will only become stronger if they can combine national support with the opportunities offered by the European Structural and Investment Funds (ESIF) and on this basis actively seek to establish research and innovation partnerships in Europe.

Against this background, our approach towards developing a new EU Framework Programme for Research and Innovation (FP9) should be:

Bolder

We must be more purposeful in defining goals and priorities at European level while avoiding duplication and pooling national and European resources. The relevance of these priorities must be self-evident as is the case with the European Research Council (ERC) and the funding of Nobel prizewinning frontier research all the way to market-relevant innovation funding. At the same time, we must consistently build on the research results of Horizon 2020 and other research activities. Initiatives of lesser European relevance should be discontinued and decisions in this matter should be closely coordinated with the Member States.

More focussed

Digital transformation, the consequences of globalization, internal and external security, health, energy, climate, resource efficiency, the global food supply, natural capital, safe and sustainable mobility and demographic change are among the grand challenges which we must address jointly in the areas of policy-making, science, industry and society. At the same time, they are innovation drivers. Europe needs the ideas, technologies and processes resulting from European research and innovation funding. Europe's competitiveness and growth prospects as well as living conditions in Europe depend on whether we can find answers to the pressing problems of our time.

More inclusive

European research and innovation funding has become an important driver of national developments in the Member States. Conditions in individual Member States vary greatly and this should also be taken into consideration in European research and innovation funding. Support must contribute to developing the potential of all Member States at all levels. It should help Member States to improve their competitiveness without absolving them from the responsibility for their national systems. In addition, we must aim at promoting and enabling easier and more effective use of synergies with other European instruments.

European research and innovation funding must also provide Member States wishing to advance more quickly with opportunities for closer bilateral and multilateral cooperation while ensuring that this does not mean exclusion of others. Responsibility and ownership, partnership and solidarity go hand in hand. We therefore need a realistic, pragmatic and open approach which recognizes the different development levels of Member States, allows variable forms of cooperation and generally develops the EU's economic and scientific strengths while promoting a stronger Union.

More outcome-oriented

European R&I funding should involve clear parameters for measuring success. FP9 must focus more strongly on the impact of funded research. Its ambition must be to contribute substantially to the solutions of the relevant societal questions of our time, thereby providing a stronger justification for European R&I funding.

More consistent

All Member States of the EU continue to be called upon to take purposeful action themselves. We see unused potential for national, bilateral and multilateral initiatives which the Member States should exploit to ensure that research and innovation can fully develop in the European Research Area (ERA). This is why it is important to consider FP9 also in the context of efforts to jointly develop the ERA further: both as a driver of this development and as an element in the broad context of innovation. We must also consider and develop reasonable links with the European Higher Education Area (EHEA). Belonging to both areas, universities and non-university research institutions are an obvious example of overlap between these two fields of action.

At the same time, FP9 must form an integral part of an overarching modernizing approach across policy areas by the European institutions. Sectoral initiatives also exist in the fields of health, space and environment and must be taken into account in the activities under FP9. Greater consistency must also be ensured in this context.

The Framework Programmes are and will remain an important instrument in implementing the European Research Area, even after 2020. Impact must be measured and monitored more closely in the future, thus demonstrating the European added value and the contribution which European R&I funding and the Framework Programme have made to implementing the ERA and to supporting the Member States in their national efforts. This provides another opportunity to show and make the public aware of the relevance of European efforts.

More user friendly

For years, analyses have demonstrated that the "European problem" is not the generation of knowledge but rather the translation of existing knowledge into marketable products and services. The aim must therefore be to ensure better coordination of the various components and fields in terms of planning, content and time schedules, to increase the effectiveness of transitions and to offer science and industry easy and seamless support along the value chain. More incentives must therefore be provided in the future to promote the commercialization of research and development results.

Some users still consider the European innovation landscape to be fragmented and ineffective and not catering to their needs. This is why we should review the various European innovation funding instruments with the aim of pooling them and making them more effective to the benefit of users wherever possible. EU research and innovation funding must generally become quicker, more targeted and user-friendly. This means in particular that the prospects of success must be improved for participants in European programmes who should be able to better assess potential success.

Various Directorates General and other EU institutions share the responsibility for the programmes and contribute to the resources and implementation. This entails the concrete risk of a lack of transparency and of duplication and ineffective management. Ensuring effective coordination between the different institutions particularly in terms of priority-setting and management will remain a special challenge for the European Commission in the context of the next Framework Programme.

Closer to the people

What is happening in Europe and what is being decided in Brussels for 500 million citizens needs not only be justified but also requires a convincing description of the objectives, relevance and successes. We need a dialogue between science, industry and the public and a debate about requirements and expectations as well as further research to explore the conditions and instruments which may help us improve public participation in the research process. The digital transformation of our lives and environments offers new possibilities for exchange and communication which should be used appropriately in this context. Agenda-setting and co-creation processes in open innovation spaces provide the possibilities which can be used to bring European research and innovation policy to people's lives. This is one way of reawakening people's interest in Europe. The new Framework Programme must also contribute and open up new approaches towards this goal.

More determined

Europe is far from achieving the 3 per cent of GDP target as defined by the Europe 2020 strategy with regard to R&D investment (2.03 % in 2015). Only few Member States have succeeded in reaching this goal at national level. Investment in research and innovation is the best way to provide for the future. There is sufficient empirical evidence of the positive impact which investment in research and innovation has on productivity and growth⁴. Research Framework Programmes have been able to strengthen Europe's scientific and technological basis and increase their benefit for society and industry. The budget of FP9 will be decided in the negotiations on the next multiannual financial framework. Regardless of their result, we must do more to jointly ensure our global competitiveness in future.

⁴ See most recently "The economic rationale for public R&I funding and its impact", March 2017.

2. Requirements for the new EU Framework Programme for Research and Innovation (FP9)

2.1 OBJECTIVES AND BASIC PRINCIPLES

Major conditions for FP9

- FP9 must be an integral part of a comprehensive European strategy to support research and innovation which covers all key fields of European action and the various sectoral policies. It is necessary to ensure coherent and complementary interaction between regional, national, European and international research programmes and policies as well as a transparent division of tasks between the European Commission and the Member States. FP9 will only achieve its full impact if activities can be coordinated more successfully in this multilevel system.
- Care must be taken to ensure compliance with the principle of subsidiarity in all areas when designing FP9. EU R&I funding is complementary for the Member States and does not substitute for national funding. The Member States must assume responsibility for their own science and research systems. It cannot and should not be the aim of EU funding to make up for national deficits either in the implementation of the necessary reforms or regarding the volume of R&I investments.
- The support of cooperation both across national borders and between the different stakeholders (science, industry, civil society, politics) has proven to be a verifiable added value of European R&I funding. The basic focus of FP9 must be to further improve cooperation between these sectors.
- FP9 must aim to provide critical masses which cannot be achieved by the Member States to address emerging European and global challenges. We must focus on a smaller number of fields of action in which joint progress can be made.
- FP9 should bring research and innovation even more closely together. In the future we must succeed in translating knowledge in marketable products and services. The early involvement of industry and regulatory authorities as well as cooperation with science along the value chain is of key importance to bridge the "valley of death" between the idea and the market. This should also enable breakthrough innovations.
- FP9 will be implemented in a research and innovation environment which will increasingly be characterized by the expansion of cooperation and measures based on the principle of variable geometry. There is largely unused potential particularly in the field of bilateral and multilateral initiatives of the Member States.
- Like its predecessor programmes, FP9 should focus exclusively on civilian activities. A European defence research programme should preferably be established as a separate research programme outside of FP9.
- FP9 is a key instrument for establishing a common research and innovation area which is efficient, open and can attract the brightest minds from all over the world. In our view, the development of the ERA is a joint task for all stakeholders which involves a need for action at regional, national and European level. The ERA must be developed further to become a common research and innovation area.
- In this process it is of great importance to promote the ERA's development as a crucial research policy framework, to reorganize ERA governance and to review the current six strategic priorities of the ERA.

- The Framework Programme is expected to contribute to the establishment of the ERA⁵. This legal obligation has not been fully reflected by the implementation of the Framework Programme and the ERA priorities to date. The Framework Programme's role as an instrument and its contribution to the implementation of the ERA must be defined more clearly.
- When elaborating FP9, we need transparent and participatory processes which not only refer to research but also promote the interplay and dialogue between science, industry, politics and civil society among other things.

Excellence as the key guiding principle

- Funding the best projects which have been selected by international standards must remain the guiding principle of EU research support. It is the basis for ensuring and permanently strengthening the competitiveness of European science and industry in an international environment. The best players in Europe must cooperate to achieve the best results for Europe and thus create a genuine European added value. This also means that we must ensure that existing networks open up to new excellent actors.
- The excellence of research as the main criterion must not be lessened by other goals such as quotas or special panels for individual groups of states or players. An approach not stringently governed by excellence would foreseeably lead to a situation where excellent researchers would seek opportunities for development outside the Framework Programme.
- Excellence and impact are directly related. They build and depend on each other: Scientific excellence is essential for developing and exploring groundbreaking ideas. Disruptive, market-creating innovations with a high impact can be advanced on this basis. Maximum impact can only be achieved efficiently through excellent research. A cultural shift towards “excellence-driven impact” should result in deepening our understanding of excellence in Europe.

Bridging the innovation gap

- Differences in the performance of the science and innovation systems of the Member States and also individual regions remain a challenge. Attractive employment opportunities in science and industry are important to avoid brain drain.
- Each Member State has excellent national centres and R&D communities which make an important and enriching contribution to Europe as a whole. This is where EU research funding comes in. The main objective must be to strengthen the existing pockets of excellence and support their development in order to improve the competitiveness lower performing Member and to narrow the innovation divide.
- Together with other EU instruments, FP9 must provide financial incentives and structural support, thus encouraging the Member States to engage in necessary national reform to create a sound basis for European project funding.
- Bridging the innovation gap is first and foremost a task for the Member States which must assume national responsibility for their own science and research systems. The EU can and should support this process with joint efforts to help Member States to exploit their full potential. Contributing with own financial resources is a precondition for ownership by the Member States which guarantees the sustainability of investments. Moreover, we see unexploited potential for bilateral and multilateral initiatives between the Member States.
- Future European research and innovation policy should aim to achieve a clear division of tasks and at the same time a closer interlinkage of the relevant EU instruments. The ESIF in particular must continue to be used intensively for R&D investment. Synergy between the Research Framework Programme and the ESIF must be explored and increased. In addition,

⁵ Articles 180 and 182 TFEU.

dedicated measures to address the innovation gap (mainly partnership approaches such as Teaming and Twinning) must be continued and further developed in the next Framework Programme.

Balanced programme and broad understanding of innovation

- The evolution of the 7th Research Framework Programme (FP7) towards the research and innovation programme Horizon 2020 was an important and crucial step in order to establish a holistic funding system. R&I funding should therefore remain combined in a single programme also under FP9. The EU Framework Programme should provide opportunities for incremental and disruptive innovations. We see a need for optimizing the interaction between the different R&I funding instruments in terms of content, finance and time schedule. The aim must be to ensure that research findings will generate more innovations for competitive products and services among others. Joint European funding must end where actors in the innovation process can and should act on their own.

- Research creates the basis for innovations. FP9 must provide funding for research and innovation projects of any size and at all development levels in a balanced ratio: from strong basic research, which is also carried out by universities to a large extent, to applied research to commercialization. Basic research must not only be funded by the ERC but also under small and medium-sized collaborative projects, including in the area of key enabling technologies. Small and medium-sized collaborative projects offer good prospects for the participation of junior researchers and newcomers (such as start-ups and young companies) particularly from Member States which have up to now been involved to a lesser extent.

- FP9 must be based on a broad understanding of innovation which covers knowledge-based, technological and social aspects. Funding for social and non-technological innovations enables us to achieve a societal (not necessarily economic) impact and increase public awareness of the added value of European R&I funding.

- We demand that the humanities and the economic and social sciences play a more prominent role. The current technological, political, regulatory economic, social, ethical or cultural transformations must be considered and placed in a wider societal context. The humanities and the economic and social sciences provide genuine contributions and even play a leadership role in certain thematic fields.

Societal challenges and the focus on "missions"

- Placing a focus on “societal challenges” was the right choice for Horizon 2020 and we should continue to pursue this approach. The ambition of FP9 must be to provide substantial contributions to solving societally relevant problems of our time. Available research findings from Horizon 2020 and other research activities should be taken into account and further planning should be based on them where appropriate. Technological as well as non-technological and social innovations must be used to develop relevant solutions.

- A stronger focus on key societal challenges is necessary. We therefore support the development of "missions" as one component of FP9. These "missions" are expected to cover the interfaces between societal needs and research, innovation and key enabling technologies in particular. This is why they must pursue an approach cutting across disciplines and sectors. Sufficient cooperation between science, industry and society must be guaranteed. The mission-oriented approach must be complementary with national processes and particularly with Member State driven initiatives, such as Joint Programming Initiatives (JPIs), must be ensured.

- Future "missions" must therefore first and foremost be defined and implemented jointly with the Member States. An agenda process governed by policy-makers (“primacy of policy”) is required for developing the "missions" in cooperation with the main stakeholders. Society must be adequately involved in defining the "missions" to ensure they address real and concrete

societal needs. In particular, this provides an opportunity to strengthen people's identification with Europe and helps us justify these European "missions".

Synergy with other programmes of the Union

- Complementarity with other Union programmes and the creation of synergies are key aspects in drafting FP9. The expectation that interaction between the different programmes would increase the impact of funding has not been sufficiently met by Horizon 2020.
- An important goal for the period after 2020 must therefore be to increase synergies between FP9 and the ESIF and between FP9 and the EU's Erasmus+ education programme (or its successor) in order to ensure a more effective use of funding. The early transfer of findings from research and innovation will also be of added value in education and training. Mobility measures in the various educational sectors, particularly higher education, and further activities such as curriculum development should be linked more closely with research and innovation funding activities. This must not lead to the "dilution" of the different purposes of the instruments. The provision of funds from different funding areas to promote research and innovation must be part of an overall strategy governed by common principles. There must be sufficient regional scope for defining content and national systems must be taken into account in funding and implementation.
- The legal framework and the requirements regarding planning, administration and monitoring should be better coordinated where this seems useful in combining the funding instruments. Consideration should be given to other possibilities of harmonization and simplification, for example standard definitions/indicators. For the affected instruments synergies should be created which would also be a precondition for properly developing the "Seal of Excellence" if a significant need can be identified.
- State aid rules regularly hamper the interplay between funding under the ESIF and funding from programmes involving direct management. It would therefore be reasonable to ensure uniform treatment under state aid provisions by enabling the application of direct management rules to projects requiring (parallel or consecutive) funding from a programme involving shared management and another programme under which funding is managed directly. More far-reaching approaches to facilitating the funding of research and innovation from the ESIF must also be considered.

2.2 STRATEGIC ORIENTATION

Overall strategic approach to funding research and innovation

- Horizon 2020 has systematically combined the EU's R&I funding. The three-pillar structure of Horizon 2020 has proven its worth in general. However, FP9 will require improvements in the interaction of activities within and between pillars..
- FP9 must build on the strengths of Horizon 2020 and develop them further: The ERC, the Marie Skłodowska-Curie actions (MSCA), addressing the grand societal challenges and the separate funding of key enabling technologies are success stories. FP9 must provide greater scope for high-risk research as a basis for breakthrough innovations which can open up new markets.
- Cooperation between national research infrastructures is also a successful approach which must be expanded. To ensure the overall efficiency of the ERA and bridging of differences in regional performance it is essential that we enable the best researchers to access the best research infrastructures across national borders and that we strengthen joint technology development.

- The European Innovation Council (EIC) should be established to serve as an umbrella for a consolidated portfolio of European innovation funding instruments which mainly benefit companies. Support for SMEs and startups is particularly important in this context provided there is a European dimension to such support, i.e. it fosters transborder cooperation, and that funding is provided for smaller market-related innovation projects. A political target for SMEs (similar to that in Horizon 2020) should also be included in FP9.

Structuring of the missions and goals for sustainable development

- FP9 must focus more strongly on the impact of funded research. Societal implications must be considered in this context. The work programmes must define the impact to be delivered clearly and realistically. Different definitions must apply to the expected impact at project level and that at programme level. Indicators must be developed for measuring the impact. Impact is not limited to economic impact but can have many facets.
- FP9 provides the opportunity to make a relevant and visible contribution to the implementation of those aspects of the United Nations' 2030 Agenda for Sustainable Development which are relevant for European research and innovation. The Sustainable Development Goals (SDGs) formulated in the UN 2030 Agenda are based on a global consensus which focuses on the values and needs of people as well as planetary limits and applies to all states irrespective of their development level. Stronger ties between FP9 and the research- and innovation-related aspects of the SDGs would also highlight the serious ambition to link national, European and international processes more closely than in the past.
- In the context of a mission-oriented research and innovation policy, we also need a debate about how to address the issues of European unity and further development of a model for an open and democratic European society. These topics are among Europe's grand challenges.
- The results of FP9 and their concrete impact on the management of grand societal challenges should be documented and communicated even better than in the past. The beneficiaries' role and ambition to act as ambassadors and communicators for EU research funding should be strengthened.

Key enabling technologies

- Key enabling technologies (KETs) such as materials technologies, nanotechnologies, production technologies, biotechnologies and information and communication technologies, which have so far been explicitly addressed, contribute substantially to securing the innovative power of European research and industry in the medium and long term.
- We demand that a separate programme area for key enabling technologies be introduced as an important basis for strengthening international competitiveness under FP9 – ranging from basic research as addressed by FET-Open and FET-Proactive in Horizon 2020 to application with a view to developing the technological basis for new solutions. The use of state-of-the-art key enabling technologies provides the basis for mission-driven technological innovations.

Open science, open innovation and digital transformation of science

- Digitalization and its effect on our lives is a European challenge which requires a European response.
- Science opens up completely new opportunities for making the fifth freedom of the single market – free movement of knowledge – a reality in the European Research and Innovation Area. The development towards open science which involves new stakeholders and changed methods of knowledge generation can increase Europe's excellence and innovativeness and contribute to the tackling of grand societal challenges. It is part of the European tradition of free, knowledge-driven exchange with and within science.

- We therefore welcome the developments which the European Commission initiated under Horizon 2020, for example regarding open access to publications and open access to data.
- Data is becoming an increasingly crucial factor in global scientific competition. The initiative to realize a European Open Science Cloud (EOSC) has the potential to generate a genuine European added value. The ambition to create a competitive cloud for European science is likely to provide important orientation as to whether and to what extent the EU is capable of the successful and early implementation of major infrastructure projects in the digital field. In our view, the European Commission, the Member States and the stakeholders should assume joint responsibility for developing the EOSC. Coordination with relevant national activities will be a basic prerequisite for success.
- (Research) Data must be seen as a resource which can generate further research and innovation. This requires an adequate balance between support for open science and the need of businesses, particularly SMEs, universities and research institutions to protect their own trade secrets when participating in collaborative projects.
- A “citizens' Europe” means that people must be involved in the development of the digital dimension of our lives. Such involvement should be intensified appropriately to exploit new knowledge and innovation potential (Citizen Science) as well as to promote the public transparency and acceptance of scientific processes.⁶
- Open science requires a change of scientific culture which is encouraged and supported by the Member States and develops its full impact in the European Research and Innovation Area. Suitable incentive mechanisms will therefore be needed at researcher and institutional level. More research must be carried out to better understand how open science changes the scientific communities' work, the way they see themselves and their relationship with society. FP9 should contribute to such "research on research".
- Innovation processes have also changed fundamentally. Innovations are not only generated by cooperation between research and industry but also and increasingly by open web-based processes which involve a variety of stakeholders in intensive exchanges (open innovation). This must be taken into account in FP9, particularly when designing the European Innovation Council.
- The innovation funding instruments must firmly focus on market needs in order to strengthen the innovative power of European industry on a long-term and lasting basis. Market relevance does not start with commercialization but needs to play a stronger role in identifying research needs.

International cooperation in FP9

- International open cooperation based on scientific excellence and common innovation goals will strengthen Europe as a location for research and innovation. At the same time, we must safeguard European interests⁷ and ensure that European players from science, industry, politics and civil society can act as equal partners at international level. This requires close coordination between the European Commission and the Member States.
- The downward trend in the participation of third countries under Horizon 2020 contrasts with the European Commission's objective to make "openness to the world" a priority of its research policy. This is why increasing efforts must be made to intensify cooperation with third countries in areas such as solving global challenges (particularly implementing the SDGs and the Paris climate agreement) and securing the future of instable countries and regions in accordance

⁶ Citizen Science must be distinguished from civic participation which refers to the possibility of (political) participation in political decisions and processes, for example to further develop our model of society.

⁷ This includes in particular the European Union's foreign and security policy interests as outlined in the EU Global Strategy.

with relevant requirements of the Common Foreign and Security Policy (CFSP). Coordinated calls with third countries and the establishment of matching funds for FP9 participation of these countries could play a greater role in the process.

- The European Commission's science diplomacy activities related to third countries and the shaping of the Commission's vision of a Global Research Area also need to be coordinated more closely with the Member States. Science diplomacy is one of the core competencies of the Member States which is why the science diplomacy initiatives of the European Commission (e.g. regular policy dialogues with non-European partner countries and regions) should only take place in close coordination with the Member States. Care must be taken to ensure the required coherence between the national, European and international levels. The goal of steady development of the ERA must be sufficiently considered in this process.

Linking education, research and innovation policy

- An internationally competitive European innovation system depends not only on an excellent research system but also on a high-quality education system. This is why the European education, research and innovation policies must be linked more closely. FP9 is both the driver and the objective of a strong European Higher Education and Research Area.
- Further progress must be made in bringing the EHEA and the ERA closer together. Institutions of higher education play an important role at national and European level. They combine teaching and research and train the researchers of the future. Greater coherence between the EHEA and the ERA is needed in particular with regard to topics such as support for young researchers, mobility and academic careers.

2.3 GOVERNANCE

Implementation of FP9 in a joint effort with the Member States

- The opportunities for Member States to become actively involved in the programme implementation need to be improved. The examination procedure as part of FP9 comitology should apply to all areas except the ERC and a "non-opinion clause"⁸ should be introduced to ensure better coordination of the work programmes with the Member States. The competent thematic programme committees need to remain responsible for shaping the work programmes. All programme areas should be regularly evaluated and the results used to draw conclusions for future programmes.
- Earlier and more effective involvement of the responsible national representatives in defining the content and budgetary allocation of the programme areas will also be important to ensure the acceptance of FP9. Overall, even greater use must be made of Member State driven initiatives, particularly JPIs, to highlight the European added value and the subsidiarity of EU programmes (that is, their complementarity and additionality).
- European research and innovation funding must ensure the improved involvement of national and European regulatory authorities.

Partnerships

- Partnerships, either Member state driven or institutionalized at European level (Contractual Public-Private Partnerships (cPPPs), Joint Technology Initiatives (JTIs), Public-Public Partnerships) can serve as an important link between the EU level and the national level. The potential of partnerships should be used more effectively to form the required critical mass and accelerate the necessary structural changes at the different action levels.

⁸ Non-opinion clause: An implementing act may not be adopted without the committee's opinion.

- In particular, the public-private partnerships – cPPPs and JTIs – must ensure better involvement and improved strategic cooperation by the Member States. We would like to see cPPPs developed in close coordination with relevant programme committee configurations and topics for JTI calls submitted for approval by the Member States in accordance with the applicable JTI governance. In addition, the development of JTIs must be complementary to the EUREKA clusters.
- The available data basis must be further improved as regards the JTIs and other externalized initiatives. This applies especially to the presentation of the committed and actually provided in-kind contributions of industry.
- The model of tripartite funding (as used in ECSEL) is of great strategic added value compared with purely nationally or EU-financed initiatives. It should be considered for other JTIs. Applicants are currently required to submit both an EU grant application and a national funding application; this bureaucratic effort should be substantially reduced.
- FP9 should be used to achieve maximum synergies with national and regional programmes and initiatives. This should include support for public-public partnerships. Pooling the funding in selected areas is a reasonable approach. However, this involves greater streamlining of European procedures and improved compatibility with national procedures. We therefore support the active use and development of current formats of public-public partnerships which have proven their worth: measures in accordance with Art. 185 TFEU, JPIs and ERA-NET-Cofund. The European Joint Programmes (EJPs) should also play a role in this context. Further discussion at EU level is needed to determine how this instrument is to be designed.
- The ERA-NET-Cofund instrument must be developed further in order to increase its attractiveness for the Member States. This transnationally financed instrument has proved to be a flexible tool due to the direct involvement of national funding institutions. Reducing the administrative burden, increasing the flexibility of in-kind contributions, raising the cofund rate or reintroducing compensation for coordination efforts are measures which are needed to promote further development.
- We see the potential of designing the public-public partnerships according to Art. 185 TFEU as an element of a partnership approach between the European Commission and the Member States in FP9. Major reference points and criteria for reforming the partnerships include an international appeal beyond the EU, consistent involvement in the achievement of the objectives of a credible European agenda based on partnership, and optimization of the structural impact in key areas for action. The Member States should therefore also use the deliberations on FP9 to draft proposals for new partnerships of this kind and of improved quality which could be realized in FP9.
- Long-term programme coordination by the Member States provides an opportunity to achieve a common goal of overarching European value. We must secure the impact and long-term success of the JPIs. The JPIs should more strongly focus on playing their structure-building role as strategic platforms in their respective thematic fields. The aim should be to increasingly contribute to the development of the programme sections in FP9 and to achieve greater coherence with international processes and activities.

Intergovernmental initiatives

- FP9 should be complementary to the existing intergovernmental initiatives which are an important component of the architecture of European R&I funding.
- As a successful bottom-up instrument, particularly for trans- and multidisciplinary R&I in Europe, the COST initiative plays a major role in the European research landscape.

- Furthermore, COST serves as an important bridge-builder for participation in the Research Framework Programme. This function should be strengthened with a view to widening the participation of less research-intensive Member States and young researchers (“inclusiveness policy”). On the other hand, this networking potential should also be used to increasingly involve end users and industry. This can be achieved by broadening the range of available instruments. Limiting COST to widening aspects would therefore not be a reasonable future approach.
- We will continue to support the participation of innovative companies and of institutions of applied research in multilateral initiatives like EUREKA.
- The European Strategy Forum on Research Infrastructures is an indispensable platform for strategic planning of European research infrastructures funded jointly by the Member States. Continued support must therefore be provided for the Forum's work.

2.4 INSTRUMENTS AND SPECIFIC MEASURES

Funding instruments

- We demand an adequate number of clearly defined and complementary instruments and funding mechanisms. Priority must therefore be given to consolidating the portfolio of instruments and adjusting it where appropriate. Evidence-based decisions must be taken to identify the instruments which have proved successful, those which should be developed further, and those which have not been successful and should be abandoned.
- The basic features of the instruments (including the criteria and procedures for evaluation) should already be defined in the Specific Programme for the entire programme period. The action types (funding instruments) should therefore be reduced to a few basic types such as Research & Innovation Actions or Innovation Actions (including Fast Track to Innovation), Coordination and Support Actions as well as a cofunding instrument.
- The focus of FP9 must be on transnational cooperation projects, that is, collaborative research based on competitive calls. Transborder cooperation and the exchange of staff, ideas, data and material constitute a European added value by themselves. The rule "three partners from three different Member States or associated states" should continue to apply.
- Public-private partnerships make an important contribution in the areas of societal challenges and industrial leadership under Horizon 2020. However, they should not be expanded at the expense of classical collaborative research in order to ensure a reasonable balance between the instruments.
- R&I grants should not be replaced by loan financing. These two types of funding are based on different intervention philosophies, they address different target groups and are not easily interchangeable. Loan financing should mainly be used for market-related investment activities primarily in the private sector. Increasing use should be made of the possibilities of the EIB and EFSI for funding R&I projects in a narrower sense.

European Research Council

- FP9 must ensure that the ERC is designed and equipped in such a way that it can retain its autonomy as a world-renowned beacon of European excellence. We reject an intergovernmental structure. The ERC must remain an EU-driven initiative.
- We support the further development of approaches to promote excellent research teams (such as the Synergy Grants).

European Innovation Council and European SME support

- The EIC should be embedded in an business-driven programme section which provides a consistent set of measures for market-related innovation activities. Existing innovation instruments must be taken into account when developing the EIC. Consideration must also be given to the question whether elements of the "Fast Track to Innovation" instrument can be applied to other instruments (e.g. six months Time to Grant, openness to all technologies, possibility of submitting applications any time). Oversubscription rates must be reduced by clear communication of quality requirements.
- We still reject individual support for SMEs at European level in view of the undesirable developments to date (lack of impact, declining national efforts, lack of European added value, high rates of oversubscription). The occasion of introducing the EIC should therefore be used to implement the urgently needed reform of the available SME instrument, which currently merely duplicates or replaces the funding activities of the Member States. It should therefore no longer be possible for SMEs to receive individual funding at European level. They must cooperate with European partners from the outset to have good prospects on the European market. The aim must be to enable SMEs to scale up their activities for the European and international markets. We support a fully bottom-up approach.
- The EIC must contribute to a new culture of innovation and entrepreneurship in Europe. The reform of European innovation policy must promote entrepreneurship and a startup culture which enables the Member States to build on successful cluster policy, engage in networking and create new innovation hubs. The EIC must help create more breakthrough innovations in Europe which open up new markets.
- Inducement prizes may become a means of practice-relevant innovation funding within the framework of the EIC and should initially be introduced as a pilot action .
- Another element could be a future EIC award honouring individual universities and public research institutions and external non-profit research centres (or even entire research organizations) for their outstanding innovation strategies which would include entrepreneurship and a strong startup culture as well as an active knowledge transfer involving, for example, varied cooperation activities with companies.
- The EIC should closely coordinate its instruments with tried-and-tested European initiatives such as the European Institute of Innovation and Technology (EIT) with its knowledge and innovation communities (KICs), EUREKA and in particular Eurostars with its proven funding of collaborative SME projects. We are in favour of continuing this successful transnational SME initiative as "Eurostars 3" in the forthcoming programme period.
- We see potential and an opportunity for using an EIC to remedy existing distortion and undesirable trends in the innovation area. A major prerequisite for achieving this goal would be to highlight the European added value. Furthermore, close coordination between the Commission and the Member States would be required to ensure the consistency of national and European funding policy within the framework of the EIC.
- The "Pre-commercial Procurement" and "Procurement of Innovation" instruments should be developed further to become more user-friendly in order to support the public procurement of innovative solutions within the EIC. These instruments enable us to clearly reduce the risks which the development of new products and solutions entails for public administrations and companies and to design research projects which meet market needs.

Rules for participation

- The rules for participation applicable under Horizon 2020 must be further improved. Care must be taken to ensure maximum continuity. This helps avoid tedious adjustment by programme users.

- All efforts to simplify and optimize the procedures must involve careful consideration of the factors of speed, legal certainty and user friendliness. We would like to expressly encourage the European Commission to speed up decision-making to the extent possible without reducing the quality of evaluation, contract negotiation and examination by the Member States. The "Fast Track to Innovation" pilot and its six months Time to Grant requirement is a step in the right direction. It should therefore be examined to what extent such a time limit could – where appropriate – be applied to other instruments as well. However, it has so far not been possible to ensure full compliance with this requirement on the "Fast Track to Innovation". Consistent efforts must be made to achieve further progress.
- User friendliness is a major prerequisite for the acceptance of the future Framework Programme. We appreciate the progress made with the reform of the Participant Portal. Further efforts must be made to optimize and enhance this portal.
- Adequate success rates are vital to ensure the attractiveness of FP9. Success rates of under 10 %, as can be found in some areas of Horizon 2020, are not acceptable. The aim must be to avoid any unnecessary use of human and monetary resources by applicants. This aspect must be considered when formulating calls and deciding on the budgets of the different topics.
- The work programmes and calls must clearly indicate the objectives and target groups in order to reduce oversubscription and ensure submission of proposals by suitable applicants.
- We are open to discuss an incentive-oriented reduction of funding ("Research and Innovation Actions" and "Innovation Actions") for industrial partners (excluding SMEs) so that more businesses will be able to participate in the Framework Programme for Research and Innovation. This may reduce deadweight effects and enables the broader involvement of companies.
- The accounting principle should be maintained so that the actual direct costs are eligible for reimbursement in accordance with national or institutional standard practice and adequate overhead rates are fixed in advance to cover the indirect costs. This must be applicable to all funding instruments and activities.
- Germany sees no basis for expanding the use of lump sums to cover staff costs and salaries. Lump sums can only be applied in areas where the Member States and their organizations form a homogeneous community. In today's very heterogeneous European research landscape, such lump sums lead to unjustified preferential treatment on the one hand and to major funding gaps on the other hand. The use of flat rates in the Marie Skłodowska-Curie actions has already resulted in considerable and thus unacceptable funding gaps in a number of Member States.
- Non-deductible value added tax must continue to be a recognized type of cost which is eligible for funding.