

Opinion of the European Economic and Social Committee on 'Mid-term evaluation of Horizon 2020'
(exploratory opinion)
(2017/C 034/10)

Rapporteur: **Ulrich SAMM**

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	Exploratory opinion
Section responsible	Single Market, Production and Consumption
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1. Conclusions and recommendations

1.1. The EESC welcomes Horizon 2020 as a strong and successful programme that brings together excellence, joint research infrastructures, collaboration across borders as well as synergies between academia, industry, SMEs and research organisations.

1.2. Horizon 2020 is a key policy instrument for implementing the Europe 2020 strategy 'to contribute to sustainable European economic growth and competitiveness by reinforcing the innovation capacity of the Member States and the Union in order to address major challenges faced by European society'.

1.3. The EESC therefore, in line with the European Parliament's research committee (ITRE), calls for EUR 2,2 billion to be restored from the European Fund for Strategic Investments (EFSI) back to the EU's Horizon 2020 research and innovation programme.

1.4. The EESC welcomes the fact that innovation carries more weight in the Horizon 2020 programme. Innovation is key to economic growth. The newly introduced SME instrument is a positive example of an efficient application, selection and monitoring process.

1.5. Funding of basic research is extremely successful. The ERC grants in particular are held in high esteem: they are viewed as high-level awards for individual researchers, and function as a Europe-wide benchmark.

1.6. The EESC is worried that funding for research into Societal Challenges has been significantly reduced. Many success stories of EU-wide research collaboration from FP6 and FP7 ended with Horizon 2020. Collaborative research should once again play a role as an indispensable element in the research and innovation chain.

1.7. The EESC calls for a careful evaluation to find a reasonable balance between the three funding pillars: Excellent Science, Industrial Leadership and Societal Challenges. This evaluation should take into account their differences in terms of impact, lead times, leverage effects and, in particular, their specific EU-added values.

1.8. The European Union needs to provide well-balanced support for the whole research and innovation chain, from fundamental to product-driven research.

1.9. The EESC also emphasises that social sciences and humanities have to play a key role in analysing and predicting the societal developments caused by changes in working and living conditions resulting from demographic change, globalisation, climate change, emerging technologies, digitalisation and education for new high-quality jobs.

1.10. The EESC is following with great interest the performance of the European Institute of Innovation and Technology (EIT) and the recommendations issued by the Court of Auditors. We expect the interim evaluation to lead to considerable improvements in the EIT.

1.11. The foundation of a new European Innovation Council (EIC), as proposed by the Commission, and which is supposed to address entrepreneurs/innovators directly, could become an umbrella which streamlines the funding instruments for innovation, thereby providing an efficient way to close the innovation gap.

1.12. The EESC strongly recommends that when introducing a new funding instrument the other instruments be reviewed thoroughly, with the aim of reducing their number and harmonising them as far as possible.

1.13. The EESC would like to stress that the provision of mobility funding and access, along with support for researchers to infrastructure across borders, is a key asset of the European Research Area, which should be supported more effectively.

1.14. The EESC is exceedingly concerned about the large disparities between Member States in terms of national funding for research and innovation. This has led to large differences in success with regard to receiving EU funding.

1.15. The EESC recommends that all instruments be reviewed in order to make improvements which may help to overcome these disparities. To this end, collaborative research bringing together several Member States will play an important role, as well as the new measures for Spreading Excellence and Widening Participation.

1.16. The EESC calls for national R&I funding to be strengthened and would like to emphasise to Member States that EU R&I funding cannot replace national efforts.

1.17. The EESC also supports the Council conclusions of 27 May 2016 stressing that, within the framework of Horizon 2020, care should be taken to ensure that loan-based financing is not further expanded to the detriment of grant-based R&I funding.

1.18. Reasonable success rates need to be achieved to avoid wasting resources and causing frustration among the best participants from industry and academia. A variety of proposals for countermeasures are available and the Commission should implement them immediately for the remaining Horizon 2020 period.

1.19. The need to further simplify Horizon 2020 procedures is still a major issue. We acknowledge the Commission's successful efforts to make applications easier. In contrast to this, the project execution stage may now involve extra burdens. The EESC recommends that the Commission accept, as far as possible, the principle that compliance with national rules is the main criterion, as long as these rules meet agreed standards.

1.20. The interim evaluation should analyse how Horizon 2020 contributes qualitatively to its objectives of fostering excellent science, addressing urgent societal challenges and supporting industrial leadership for greater economic and inclusive growth that creates real jobs in Europe, rather than focussing too much on quantitative measures such as counting publications, patents and return on investment, as the FP7 evaluation has done. It also recommends establishing compatible indicators for both research and innovation investments within the Structural Funds and the EFSI.

2. Introduction

2.1. Horizon 2020 — the Framework Programme for Research and Innovation (2014-2020), was launched in 2014 to strengthen scientific excellence, to meet the major challenges facing society in Europe and to promote economic growth. It followed the Seventh Framework Programme for Research and Technological Development (2007-2013). The structure of Horizon 2020 differs significantly from FP7, as the programme now also encompasses the European Institute of Technology (EIT) and parts of the former Competitiveness and Innovation Framework Programme (CIP). As can be seen both in this new structure and in the name, innovation has a much stronger role in Horizon 2020 than in its predecessor.

2.2. The EESC has provided a detailed analysis of the proposal for the Horizon 2020 Regulations in its opinion from March 2012 ⁽¹⁾.

2.3. The EESC welcomes Horizon 2020 as a strong and successful programme that brings together excellence, research infrastructures and most of all researchers from different EU Member States, associated states and around the world, and which produces important results as well as synergies between academia, industry, SMEs and research organisations. It is the world's largest public funding programme for research and innovation and a strong signal that the EU is investing in its future.

2.4. The following three main pillars of Horizon 2020 comprise over 90 % of the Horizon 2020 budget:

1. 'Excellent Science' with the European Research Council (ERC), future and emerging technologies (FET), researcher mobility (MSCA) and European research infrastructures (EUR 24,4 billion).
2. 'Industrial Leadership', focussing on the competitiveness of the European Industry in six sub-programmes with a particular emphasis on SME funding (EUR 17 billion).
3. 'Societal Challenges' with seven sub-programmes (EUR 29,7 billion).

2.5. The programme was agreed by the Council and European Parliament with a total budget of over EUR 70 billion (nearly EUR 80 billion in current prices) of funding over seven years. The programme's budget was cut by EUR 2,2 billion in 2015 so that these funds could be used for the EFSI.

2.6. Horizon 2020 has a multi-faceted role in the strategy of the EU. It is the financial instrument that implements the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. It has its roots, however, in the Lisbon Treaty, notably Articles 179 et seq., which set the goal of achieving a European Research Area and task the European Union 'with the implementation of research, technological development and demonstration programmes, by promoting cooperation with and between undertakings, research centres and universities'.

2.7. Horizon 2020 was established in times of severe economic challenges and youth unemployment in Europe, and in consequence has put a much stronger emphasis on innovation than earlier EU research programmes. Innovation is generally understood in this context to be the commercial introduction of a new or significantly improved products and services.

2.8. In this context, Horizon 2020, with its focus on economic growth, has also established a new SME instrument specifically designed to help individual SMEs to be more innovative. Its aim is that 20 % of the funding in pillars 2 and 3 will be absorbed by SMEs and it places a stronger emphasis on financial instruments.

3. From research to innovation

3.1. The EESC acknowledges the success of Horizon 2020, and welcomes the shift in focus towards more innovation for a growing economy. However, it also would like to highlight some dangers concerning the research and innovation chain, which it feels could threaten this success.

⁽¹⁾ OJ C 181, 21.6.2012, p. 111.

3.2. The European Union needs to address the whole research and innovation chain, from fundamental to product-driven research. Only well-balanced support along this chain will ensure that the know-how generation results in the application of 'know-how' and eventually societal and economic benefits. The EESC calls for a careful evaluation to find a reasonable balance between the three funding pillars Excellent Science, Industrial Leadership and Societal Challenges, taking into account their differences in terms of impact, lead times, leverage effects and, in particular, their specific EU added values.

3.3. Fundamental research in Europe is extremely successful. The bottom-up funding from FET, the MSCAs and the ERC should definitely be maintained at a high level. The ERC grants in particular are held in high esteem: they are viewed as high-level awards for individual researchers, and function as a Europe-wide benchmark.

3.4. We should also note that modern research is largely carried out in collaboration. Therefore, irrespective of the importance of supporting individual researchers, we deplore the fact that funding for collaborative basic research has been significantly reduced in Horizon 2020.

3.5. Basic research that has a long lead time before innovation is achieved, and that is chiefly motivated by societal challenges, is for the most part not covered by the ERC. This type of collaborative research was very successful in earlier framework programmes, but with Horizon 2020 it lost much of its importance. Societal challenges were reduced by 3,5 % in order to finance EFSI and collaborative research in the lower Technology Readiness Levels (TRL) 1-5 lost ground to higher TRLs. This has driven many universities and research organisations away from research on societal challenges with the effect that interaction between industry and academia has been reduced rather than strengthened. The EESC urges the Commission to address this worrying development. It is of vital importance that funding for Societal Challenges is restored and research in TRLs 1-5 is included more prominently in the Horizon 2020 Societal Challenges in order to cover the entire research and innovation cycle. In this context it remains of great importance that the Commission liaises with stakeholders when developing the details of what Societal Challenges will look like at work programme level.

3.6. The EESC welcomes the fact that innovation carries more weight in Horizon 2020. Innovation is key to economic growth. The newly introduced SME instrument is a positive example of an efficient application, selection and monitoring process. The success of this instrument can be seen from the fact that the original goal of a 20 % budget share for SMEs has already been exceeded. The evaluation should analyse the impact and effectiveness of this instrument in relation to the different types of SMEs and their reasons for applying as a single business (as most of them do) or as a consortium (national or EU-wide). Care should also be taken to analyse the extent to which a decrease in national funding for SME correlates with requests for funding at EU level. It is vital that SME funding also remains accessible to SMEs at regional and local level and that EU funding is not used to justify cuts to this major source of support at the local level.

3.7. Industry participation is vital for the success of Horizon 2020. It is evident that the total amount of funding from Horizon 2020 for industries is less significant in relation to industry spending on R&I. The main benefits for industry partners can be seen in terms of network building, new links to universities, research organisations and other stakeholders such as cities. EU projects play a significant role in providing critical mass for developing new standards and in supplying industry with new expertise, new clients and markets and new talents. This beneficial effect for Europe's competitiveness should be fostered further. It must be noted that indicators of success such as the number of new jobs are not yet applicable to Horizon 2020 in view of the lead time for innovation and job creation.

3.8. The EESC is following with great interest the performance of the European Institute of Innovation and Technology (EIT). Europe needs strong interaction between industry, research and education, which is the main aim of the EIT. According to the special report of the Court of Auditors (April 2016), the EIT however faces several significant challenges. Although some of them have already been tackled recently, we expect that the interim evaluation will lead to significant overall improvements in the EIT.

3.9. A discussion about the scope and establishment of a European Innovation Council (EIC) has been initiated by the Commission. The EIC is supposed to directly address entrepreneurs/innovators. The EIC might become a faster mechanism for completing the final steps in closing the innovation gap. The EIC could become an umbrella under which the funding instruments relevant to innovation are streamlined. This of course requires careful synchronisation and harmonisation with all the other funding instruments. The EESC welcomes this initiative and is prepared to contribute to this discussion once concrete proposals are available.

3.10. One of the key challenges for the coming years it is for Horizon 2020 to deploy its full potential to support social innovation, which is critical to attain EU2020 targets. The EESC recalls that because of their nature social economy enterprises have an important role to play to that effect and urges the European Commission and the Member States to ensure that access of those enterprises to Horizon 2020 funding happens on equal terms as other actors.

3.11. The EESC also emphasises that social sciences and humanities are very relevant in Europe. Our society will inevitably change due to ageing and demographic change, which leads to new research priorities⁽²⁾. Our society will undergo fundamental changes on the way towards sustainable conditions. Changes in boundary conditions arising from phenomena such as globalisation, climate change, access to energy and emerging technologies — of which digitalisation is a main driver — will even accelerate societal changes. Improving our education system will be key to ensuring that we are prepared for the future, with the right skills for future high-quality jobs. Assessing the impact of all these developments on our society, including any problems that may be triggered by changes in working and living conditions, should receive high priority and social sciences must play a key role here.

4. The European Research Area and the EU added value of Horizon 2020

4.1. One of the objectives of the 'Framework Programme for Research and Innovation' (Horizon 2020) is to complete the European Research Area (ERA). Horizon 2020 is also seen as a policy instrument for implementing the Europe 2020 and Innovation Union initiatives. Key elements for the ERA are a common European research infrastructure policy, collaborative research projects, the mobility of researchers across borders, and the coordination of major research programmes under the difficult boundary condition that EU programmes must operate in an environment in which most public funding for research and innovation is administered by Member States.

4.2. The European Strategy Forum on Research Infrastructures (ESFRI) has so far served as a useful coordination instrument for identifying new research infrastructures of pan-European interest. While setting up large-scale research facilities mainly depends on national funding, the European level is important for supporting consortia, and for providing access to infrastructure for researchers across European borders. The EESC shares the concerns of research communities about the insufficiency of this support and urges the Commission to strengthen it significantly, thereby guaranteeing access on the part of European researchers to the national and European facilities which are a key asset of the ERA.

4.3. In general, mobility within the ERA is of utmost importance. We urge therefore that funding programmes like the Marie Skłodowska Curie Actions should be maintained at a prominent level.

4.4. We welcome the initiative Open to the World, assuming that scientific quality remains the main driver for this activity. The first indications that the decrease in the participation of third countries is affecting even industrialised economies — e.g. the USA — should be carefully examined, in order to determine the causes of this worrying development.

4.5. The EESC would like to emphasise that collaborative research with a minimum of three partners from different Member States must remain the backbone of European research funding. Enabling different innovation and research players to join forces to address challenges that cannot be met by one country alone, and to create synergies within the EU research landscape is something that needs to be done at EU level and creates significant EU added value.

⁽²⁾ OJ C 229, 31.7.2012, p. 13.

4.6. The EESC is exceedingly concerned about the large disparities among Member States in their national funding of research and innovation. As a result, this has led to large differences in success with regard to receiving EU funding. We observe with deep concern that these disparities are actually growing. In particular, the EU13 Member States have had little success in acquiring Horizon 2020 funding. The differences in national funding for research and innovation are huge. This is not only due to differences in GNP within the EU. In addition, the stronger Member States also spend much more in relative terms on research and innovation than their weaker counterparts.

4.7. It can clearly be stated that the failure to achieve the goal of 3 % of the GNP for R&I funding (Lisbon 2007) is essentially due to a lack of national research and innovation funding. Horizon 2020 contributes only a minor share to this. The EESC calls for national research funding to be strengthened and would like to emphasise to Member States the fact that EU research funding cannot replace national efforts. This is also vital to counteract the dangers of brain drain in certain Member States.

4.8. An analysis of the rising gap between Member States should be carried out in order to assess the reasons for it. The EESC welcomes the new measures for 'Spreading Excellence and Widening Participation' which may help to reduce the gap. Other measures which should be considered are providing advice for support structures for applicants, or adding participation of EU-13 countries as a prioritisation criterion among equally good projects, provided the competing applicants meet the same excellence criteria. We would particularly propose strengthening a funding instrument already in place — collaborative research — which builds bridges between research communities, thereby helping to dissolve disparities.

4.9. Open Science activities are supported by the EESC ⁽³⁾. The use of Open Access to publications has made progress; however there are still serious problems with some publishers — an obstacle which could be overcome by coordinated EU efforts. The development of Open Data is to be welcomed but a bottom-up process within research communities is still required for defining the details of its implementation.

4.10. A European science cloud, as suggested by the Commission, could offer Europe's researchers a virtual environment to store, share and re-use their data across disciplines and borders. The EESC supports this initiative ⁽⁴⁾, believing that it could be an important element for Open Data. We urge the Commission to carefully take into account cross-border cloud systems in specific science communities, which already exist and work well, as well as national activities aiming to achieve the same objective.

5. Towards Efficient Processes

5.1. The EESC welcomes the European Commission's efforts to add further 'simplifications' to Horizon 2020. In particular, smaller players will be attracted by less bureaucracy, easier rules and more legal certainty.

5.2. The newly introduced SME instrument is a positive example of an efficient application, selection and monitoring process. Businesses have taken a very positive view of elements such as the short time to grant loan applications and funding for bottom-up ideas. These elements should be used as a best practice for other instruments in H2020.

5.3. Many major achievements have been made in simplifying rules and tools such as the much-improved participant portal, but important issues will still have to be resolved, since they severely damage the attractiveness of the programme. For example, internal invoicing as used by the majority of industry and academic organisations is made nearly impossible, and stricter provisions on the 'full capacity' of facilities used has added further complications. The reluctance of the Commission to reimburse individual actual salary costs rather than past values of the last closed financial year has been partly addressed but still poses an extra administrative burden. The Horizon 2020 regulations still often require parallel bookkeeping. The massive administrative expertise still needed by the participants to implement these facets of H2020 makes participation especially cumbersome for SMEs and also discourages international partners.

⁽³⁾ OJ C 76, 14.3.2013, p. 48.

⁽⁴⁾ Opinion on European Cloud Initiative — Building a competitive data and knowledge economy in Europe (TEN 592), OJ C 487, 28.12.2016, p. 86.

5.4. The EESC thus encourages the Commission to further simplify Horizon 2020 and to respect the Horizon 2020 Rules for Participation which envisage a 'wider acceptance of the usual cost accounting practices of the beneficiaries'. It also recommends that reflections on future framework programmes should endeavour to make further progress in this direction, accepting participants' usual accounting principles wherever possible by starting from the principle that compliance with national rules is the main criterion, as long as these meet agreed standards. Those standards might be developed and tested in collaboration with the European Court of Auditors.

5.5. In view of the next Framework Programme the EESC also strongly urges refraining from setting up more instruments and encourages the Commission instead to actively reduce the number of instruments and also to benefit from the evaluation of the JTI to limit them to the most effective ones.

5.6. The EESC, in line with the European Parliament's research committee (ITRE), calls for EUR 2,2 billion to be restored from the EFSI back to the EU's Horizon 2020 research and innovation programme to compensate for the considerable negative impact the cuts have. The EFSI invests in projects that cannot be seen as compensation for those projects that can no longer be carried out under Horizon 2020, as the vast majority of the EFSI projects do not address research aspects but the implementation of existing technologies. This certainly has merit, but it must not limit the source of innovative new technologies for the competitiveness of Europe which Horizon 2020 can provide.

5.7. In Horizon 2020, classical co-funding for projects in which the Commission allocates grants to specific projects, thus contributing to the total costs, is increasingly losing ground to financial instruments. The financing of research via loans is however, for both industry and for academia, useful only at the final end of the innovation chain and not in the area of break-through innovation. In addition, many relevant players are not addressed by these instruments since public research organisations in many Member States are not allowed to take out loans. The EESC thus urges that both Horizon 2020 and its successors should remain focused primarily on co-funding.

5.8. The EESC therefore supports the Council conclusions of 27 May 2016 stressing that, within the framework of Horizon 2020, care should be taken to ensure that loan-based financing is not further expanded to the detriment of grant-based R&I funding. Europe's industry needs access to game-changing new technologies derived from high-risk projects, and these will not be discovered via loans.

5.9. The first years of Horizon 2020 saw success rates which in some cases were as low as 3 %. In general, success rates have changed from 1:5 in FP7 to 1:8 in Horizon 2020. Reasonable success rates need to be achieved to avoid wasting resources as well as causing frustration among the best industry and academic participants. When success rates are much lower, the costs generated by the efforts in proposals can exceed the funding provided. A variety of proposals for countermeasures are available (impact more precisely defined, two stage processes, professional advisors, follow best practice) and the Commission should implement them immediately for the remaining Horizon 2020 period.

5.10. The Seal of Excellence for excellent applications that were not funded might be particularly good for SMEs who are hoping to obtain funding from the European Structural and Investment Funds. The question of whether the rules about state aid could cause problems in these cases still needs to be clarified.

5.11. The EESC recommends that the interim evaluation should analyse how Horizon 2020 contributes qualitatively to its objectives of fostering excellent science, addressing urgent societal challenges and supporting industrial leadership for greater economic and inclusive growth that creates jobs in Europe, rather than focussing too much on quantitative measures such as counting publications, patents and returns on investment, as the FP7 evaluation has done. It also recommends establishing compatible indicators for both research and innovation support within the Structural Funds and the European Fund for Strategic Investments.

Brussels, 20 October 2016.

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