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An outline of the 9th Framework Programme CNRS Contribution

The EU Framework Programme for Research and Innovation is the European Union's primary tool for bolstering its scientific potential, advancing its economic and social integration, and contributing to the UN's sustainable development goals for 2030.

A major player in European research, the CNRS has accompanied the growing importance of the Framework Programme's various editions since 1983, and was one of the first to benefit from the advances they made possible, including the sharing of knowledge on the European scale, the promotion of high-level research through the ERC, and cross-fertilization of fundamental public research with private innovation.

As such, given the scientific challenges of the decade ahead, the CNRS seeks to contribute to the development of the 9th Framework Programme, which will take effect in 2021, by addressing the following 10 recommendations:

1. Making the FP9 a real budgetary priority for Europe
2. Making a genuine European research space more attractive
3. Reinforcing the ERC
4. Investing in fundamental research
5. Promoting groundbreaking innovation, notably through the EIC
6. Strengthening the role and influence of the humanities and social sciences
7. Bolstering a European support policy for VLRI
8. Opening up knowledge and data
9. Working with communities on the notions of impact and evaluation
10. Ensuring the simplicity, readability, and complementarity of different tools, calls for proposals, and financing procedures

1. Making the FP9 a real budgetary priority for Europe

Europe must continue to make research and innovation one of its chief priorities. Competition is increasingly fierce on the international level, with massive investments in many countries, including of course the United States and China as well as many other nations, particularly in Asia, that have often made specific theme- or application-based choices. If Europe wants to maintain its sovereignty and continue to play a role in tomorrow's industry, in addition to creating much-needed employment and ensuring that scientific progress benefits the greatest number of people, it must bank on knowledge and its transfer, and increase its investments further.

The steady growth of framework programme figures (62% on average for each new edition), which was confirmed in the transition from the FP7 (€50.5 billion) to Horizon 2020 (€79 billion), must continue. The CNRS therefore strongly supports the proposals put forward by Pascal Lamy in his report submitted in July 2017, which advocates strong backing for research. This project would double the framework programme (€160 bn), with the goal of creating 650,000 jobs and incrementing European GDP by 0.46% by 2040.

Such a budget would also put an end to ridiculously low acceptance rates for certain calls for proposals (cf. *FET Open* with an acceptance of 2.5% for calls in 2017). Such rates are responsible for the system's extremely weak overall results, and increasingly discourage the best candidates from applying.

2. Making a genuine European research space more attractive

Today, the competition for attracting and retaining talent takes place at the global level. Research is an activity that is universal by nature, and international cooperation is clearly indispensable, and should consequently be encouraged. It is nevertheless true that the territories where these talents are put to use enjoy a considerable advantage when it comes to transforming research into innovation that can create value and employment.

Europe has an unparalleled scientific culture and tradition, with teams and laboratories at the forefront of the international scene. It also has the required technological and scientific facilities in many fields, with high-quality environments bringing together academics and industrial actors.

Europe must opt for constructing a real European research space in which talent can circulate freely. Such mobility, which is supported by many in theory, should not in practice translate into an obstacle course for scientists seeking to go from one country to another based on opportunities for long and even permanent missions. For shorter secondments, which are indispensable, programmes such as Marie Skłodowska-Curie Actions must be encouraged and strengthened.

This genuine European research space will also help convince top-level students from across the globe to come to Europe. Furthermore, it will prompt more established scientists to settle in. "Widening" programmes have been set up to help build a proper European space. The CNRS thinks it is important to pursue such programmes, and will serve as a "leading counterpart" for them.

Based on the model of the French MOPGA ("Make Our Planet Great Again") scheme, Europe could for instance propose "packages" to attract or bring back scientific pacesetters working outside the "Old Continent," by offering simplified and attractive social and financial conditions (salary, social coverage, retirement).

3. Reinforcing the ERC

In 10 years, the ERC established itself in both Europe and across the globe as a programme of exceptional quality and great scientific rigor. Such rigor owes much to the selection of recruiting panels, and as such the process of recruiting to the panels should remain unchanged.

The ERC must therefore be strengthened, and the doubling of the framework programme's budget should at the very least lead to a two-fold increase in the ERC's budget. The CNRS emphasizes the need to keep the acceptance rate above 15%, a threshold that the Council has been able to maintain so far, in order to continue to fulfill its objectives and remain competitive on the international scene.

The CNRS believes that the system of individual grants should remain the ERC's priority. Experience has shown that these grants also broadly benefit the recipients' teams, thereby helping train and prepare the new generation of scientists that Europe needs. In addition, the CNRS would very much welcome an increase in the number of "Synergy" grants, with priority being given to truly interdisciplinary projects.

In view of its experience (the CNRS has been the "host institution" of more than 350 ERC grants over the last 10 years), the CNRS believes that the PoC system should be reinforced in order to better promote leading research results. In this respect, the CNRS suggests expanding the collaboration between the ERC and EIC (cf. recommendation 5).

4. Investing in fundamental research

The CNRS wishes to emphasize the crucial need to support fundamental research in all fields in which Europe intends to play a role today or in the future. It can often take years or even decades for extraordinary knowledge to lead to applications.

It would therefore be suicidal in the short term to fund only finalized research with an immediate impact. To cite only a few examples, renewable energy, artificial intelligence, and the transformation of work require basic research whose effect on our societies is indisputable, without it being possible to estimate the date of this impact.

In addition to and beyond today's major societal challenges, humanities and social science research that helps reflection on the meaning of the activity of individuals and organizations, whether public, private, or nonprofit, should be given greater consideration in the FP9 (cf. recommendation 6). This ability to analyze the wellspring of human activity is an essential cross-disciplinary resource for Europe.

Finally, in addition to the ERC, whose essential nature the CNRS has emphasized above, Europe must encourage, support, and finance different forms of basic research, especially of the more collaborative kind, whether this involves a specific subject of study, analytical methods, or problem solving. In this context, the principle of open calls should be strongly preferred.

5. Promoting groundbreaking innovation, notably through the EIC

The CNRS is convinced that fundamental European research, whose exceptional quality is recognized worldwide, provides fertile ground for building tomorrow's groundbreaking innovation that can generate jobs and value, and preserve indispensable European sovereignty.

In this regard, the CNRS is strongly in favor of creating a European Innovation Council (EIC). However, the word innovation has several meanings, and the objectives of the EIC must be clearly specified. It will also be important to identify how it relates to the EIT, whose objectives may appear to be similar.

The CNRS recommends that the EIC, like DARPA, should pursue a "startup" financing philosophy through high-risk research and development activities with high potential for groundbreaking innovation. While adhering to the principle of "fail fast," these projects could bring together, or on the contrary trigger competition between, actors with different profiles, such as academics (universities and research centers) and industrial players (large groups, SMEs, and startups).

6. Strengthening the role and influence of the humanities and social sciences

HSS research is capable of groundbreaking innovation, and in conjunction with citizens and their representatives, helps design solutions developed by all and acceptable to all. The FP9 must therefore include an HSS dimension, and should do so from the outline of its strategic orientation and across all of its programmes. It is not meant as a complement or a subsequent addition to actions conceived from a purely instrumental perspective.

To do so, the CNRS supports the maintenance of a cluster focusing on the humanities and social sciences, based either on the Horizon 2020 model ("inclusive, innovative and reflective societies") or a broader one ("resilient and secure societies"), on the condition of going beyond a simple juxtaposition of the H2020 "Inclusive, innovative and reflective societies" and "Secure societies – protecting freedom and security of Europe and its citizens" challenges. Among the general themes that can partially guide this cluster, the CNRS stresses the importance of reflecting on democracy and the governance of past and present societies, the study of cultural heritage, and the analysis of global social transformations.

The CNRS recommends that an HSS dimension should be maintained in all thematic clusters, with high standards of integration. It is important to ensure that clusters and calls for proposals include keywords that enable HSS research actors to apply.

The CNRS advocates that the budget allocated to the HSS cluster, along with the share of HSS in other areas, should be substantially increased.

7. Bolstering a European support policy for VLRI

Very large research infrastructures (VLRI), which are made available to the largest possible scientific and technical community, are now being conceived on a European and even global scale. For leadership and sometimes even sovereignty reasons, Europe must keep or acquire a leading role in these research infrastructures, which greatly enhance its attractiveness and help create lasting interdisciplinary networks. As demonstrated by synchrotrons as well as micro- and nanotechnology centers, or more distributed RI, notably in environmental observation, VLRI also have a socioeconomic impact not only through their construction, but also because of the relatively short-term innovation that they require when it comes to facilities that need cutting-edge R&D in materials, extreme condition technology, components, software programmes, computational computers, etc.

The CNRS is strongly in favor of increasing the budget for supporting RI and VLRI in the FP9, which would be made possible by doubling the funds allocated to the next framework programme.

More specifically, the CNRS supports the principle of Design Studies, which enables the emergence of interesting innovation in terms of infrastructure. Yet acceptance rate is currently below 10%, which is too low, making it necessary to expand the budget and consider the implementation of a two-step proposal system, along the lines of that applied in Integrating Activities.

Support for scientific communities organized in networks through Integrating Activities must generalize the model, which is being tested with the X-ray source community (synchrotrons and XFEL), and extend it to the LEAPS (League of European Accelerator-based Photon Sources), in order to encourage the development of these communities in new competitive directions. With the same objective, the activity of interdisciplinary clusters, notably with regard to support for infrastructures bearing the ESFRI label, should also be strengthened.

Moreover, given the structural, interdisciplinary, and data access role they will play, the CNRS recommends that specific support be provided for HSS (Darjah, E-RIHS, and OPERAS—Open Access in the European Research Area through Scholarly communication).

8. Opening up knowledge and data

The CNRS believes the FP9 should make the promotion of open science one of its action priorities. The results of research financed by public funding, whether national or European, should be available to the public free of charge. The submission of author-manuscripts to open archives after peer-review should become the norm. The author-pays model (Article Processing Charges – APC) should be replaced by financing the diffusion of results in Open Access. The European Community should devote part of its funding to publishing infrastructures that promote bibliodiversity.

The measures concerning open research data should also remain mandatory, and their application should be extended (with possible exceptions whenever justified). These elements contribute to the proper evaluation of research, the reproducibility and efficiency of science, and they ensure scientific transparency and integrity. Specific calls should be launched to promote the development and pooling of data infrastructures in compliance with disciplinary practice.

Beyond the opening of scientific results and data, which facilitates knowledge sharing and dissemination, the CNRS believes that it is essential for the FP9 to give pride of place to the development of scientific culture. Today's science must be the foundation of a society of progress, one in which technological and social advances benefit the largest number of people. To do so, science must also be explained and understood in order to shed light on debates in civil society. Whenever the subjects lend themselves to it, the CNRS will wholeheartedly support approaches involving participatory science.

9. Working with communities on the notions of impact and evaluation

The CNRS is concerned about potential flaws in the evaluation process as well as in the principles it must be based on.

The first cause of concern are acceptance rates that are too low. Well-documented and precise studies have shown that such rates in no way guarantee projects of higher quality, unlike what non-specialists may believe. On the contrary, they carry the significant risk of greatly increasing the random nature of the final selection, and of potential bias that is not based on scientific criteria.

A minimum acceptance rate of 15% should be the absolute rule for all calls for proposals in the FP9. Beyond the random character of the selection in cases involving very low acceptance rates, the CNRS wishes to point out that this hinders the system's overall effectiveness, if one takes into account the time invested, and therefore the money spent, by project participants who are not selected (applicants, assessors).

Another worrying element involves the notion of impact. The CNRS is convinced that good science and good projects always have an impact. Yet it would be tragic to reduce this impact to potential short-term economic consequences. As pointed out earlier, many discoveries only led to applications years or even decades after they occurred.

10. Ensuring the simplicity, readability, and complementarity of different tools, calls for proposals, and financing procedures

The CNRS advises that the roles and objectives of the future EIC and EIT be precisely clarified. It also calls for "clusters" and "missions," which are currently the object of much speculation, to be given special attention both in their definition and complementarity with what already exists. The CNRS especially recommends that these new instruments be jointly developed with their future users and beneficiaries in an effort to ensure their simplicity and readability.

With regard to the different tools and calls for proposals, the CNRS hails the Commission's recommendations seeking to merge instruments with similar objectives, notably those that are connected to public-private partnerships (PPP, JTI), and eliminate any overlaps.

The CNRS welcomes the administrative simplification measures initiated during the Horizon 2020 program, and endorses their acceleration. This enables researchers to devote more time to their work, rather than to the administrative management of their projects. In particular, the CNRS would like obligations related to reporting and supporting documentation to be eased, and better account to be taken of the financial risk.

Concerning financial rules, the CNRS argues for greater flexibility, with a view to adapting instruments to the programme's scientific objectives. The CNRS therefore welcomes the ongoing experimentation aimed at evaluating the possible inclusion of reimbursements on a fixed-sum basis. This is indeed an opportunity to greatly simplify certain types of actions.

The CNRS hopes that the Commission's commitments regarding the convergence of rules between the ICRP and other European programmes, notably with respect to structural funds, will be finalized quickly.