

PROPOSAL FOR A EUROPEAN STRATEGIC TECHNOLOGICAL AND APPLIED RESEARCH COUNCIL (ESTARC)

**An indirect-management initiative to complement
other ERA-structuring measures**

The Changing Nature of the Framework Programme for Research and Technological Development

Successive RTD Framework Programmes (FP), the principal EU research policy mechanism, have tended to operate by identifying priority research areas and then inviting bottom-up research proposals. Thus the FPs have evolved into a predominantly project-oriented funding programme, and have achieved substantial size¹.

The rationale for the EU RTD Framework Programme is set by Article 163 of the EU Treaty: *The Community shall have the objective of strengthening the scientific and technological bases of Community industry and encouraging it to become more competitive at international level, while promoting all the research activities deemed necessary by virtue of other chapters of this Treaty.*

The FPs have not fulfilled all expectations. Frequent criticisms have included:

- lack of focus - too many and too broad priority research areas, lack of strategic targeting;
- slow, bureaucratic project administration, and
- failure to engage industry sufficiently, too much funding of "academic" projects with little real impact on competitiveness.

FP6 saw the beginnings of a change in approach. The objective was established of creating a "European Research Area" (ERA), and while the Commission maintained its predominant project-oriented funding approach it introduced new ERA-related objectives and "structuring" policy instruments (e.g. Networks of Excellence, ERA-NETs, European Technology Platforms and Joint Technology Initiatives...). The changed approach continues, and has been reinforced, in FP7.

Beyond the general ERA policy objectives *per se*, other motivations on the part of the Commission appear to be at work²:

- **increase industrial participation in European research programmes**, e.g. through the introduction of Art. 171 Joint Technology Initiatives (JTIs);
- **obtain greater involvement of the Member States** in programming and funding cross-border research, e.g. through ERA-NETs, Art. 169 initiatives, "Joint Programming", and

¹ An analysis by KOWI published in 2002 estimated that the FP accounted for approaching 25% of all public funding for third-party research in the EU.

² In addition to the three motivations listed hereafter, one might add that Commission plans foresee a reduction in the personnel of DG Research in the coming years, but it is not clear if this is more a cause or a consequence of the changing nature of the FP described here.

- **withdraw from project administration**, e.g. through “externalisation” to executive agencies (ERC, REA³) and “outsourcing” to separate legal entities (“indirect management”) established to manage, for example, Art. 171 JTIs, Art. 169 initiatives and perhaps, in the future, Joint Programming initiatives by groups of Member States.

Consequences of the New Approach

The introduction of ERA-structuring measures such as JTIs, Art. 169 initiatives, Joint Programming etc. is significantly affecting the thematic targeting of European research policy and may also affect its funding models and IPR management arrangements. There does not appear to be an underlying overall strategic plan, with the result of potentially significant gaps in the resulting future policy mix.

The **thematic targeting** of recent FPs has, in practice, tended to follow a “shopping list” logic as a result of wide-ranging public consultations and political pressure to “satisfice” the largest possible number of research stakeholders.

The new policy approach – such as it is today, at least – is significantly changing the thematic targeting of the FP:

- JTIs, some 169s, some KICs⁴ will have essentially (big-)industry-driven agendas;
- Joint Programming initiatives, some 169s, and some KICs will have essentially public-policy-driven agendas, and
- ERC policies and programmes will probably continue to correspond largely to academic priorities and promote promising and established individual “star scientists” and their teams

Funding models and **IP-handling rules** may change and diversify⁵.

The Need for a Comprehensive Approach to ERA

It is now generally recognised that research policies should take an innovation perspective (i.e. research as a means to an end: application) and a systemic view (i.e. achievement of the end will require the – possibly publicly incentivised or otherwise facilitated - involvement of many non-research actors, e.g. financiers, IPR actors, norms and standards players, lead customers ...).

Such an innovation-targeted, systemic view must necessarily address many different, legitimate stakeholder interests and varieties of research. A single policy or programme cannot successfully address them all. A range of instruments, designed and managed to be complementary, is therefore required.

If we assume that the Commission is really determined to fully exit from all project administration by the end of FP7, and that it will do so by using the “outsourcing” and externalisation” mechanisms identified above, then the resulting ERA is likely to

³ *European Research Council* and *Research Executive Agency* respectively.

⁴ Knowledge and Innovation Communities, i.e. the operational entities of the European Institute of Innovation and Technology.

⁵ We observe already in JTIs a concerted effort, originating in DG RTD, to impose a 20% cap on overhead costs. There have also been discussions in some putative JTIs about reducing funding rates from 75% (e.g. for non-profit organisations) to 50%. Also, in some JTIs national funding rules apply, which may be less advantageous than FP funding rules.

IP-handling rules may also be affected, as has been observed in the case of the IMI JTI.

“Deviant” funding and IP-handling regimes may be appropriate in specific contexts, but must be justified substantively.

reveal significant gaps that policy must fill by introducing additional, complementary instruments. An industry-driven JTI or KIC, for example, will tend to focus on the specific interests of a certain industrial community. That is, of course, its purpose. But the number of such communities likely to form as JTIs or KICs is probably limited: most likely only in relatively well structured industry sectors or sub-sectors characterised by a few dominant players – generally with research and SME participation, for example, mostly comprising established supply-chain partners. More extensive communities are unlikely to form because the difficulty of managing them would increase exponentially with their size, and competition issues would intervene⁶. This is not to criticise *per se* industry-driven JTIs or future KICs, simply to signal that not all industrial research needs can be addressed using these instruments.

Proposal for a European Strategic Technological and Applied Research Council (ESTRAC)

The following proposal for a European Strategic Technological and Applied Research Council (ESTRAC) corresponds to two policy objectives:

- the need to complement existing ERA instruments in order to satisfy significant research needs, and
- the Commission's new-found preference for "indirect management" of research policy initiatives.

ESTRAC would comprise a 15-member⁷ Council of distinguished individuals. The Council would be underpinned by a dedicated agency, to provide day-to-day management support and to operate ESTRAC programmes.

ESTRAC's role as a strategic body would be to monitor the development of the European Research Area with particular reference to the needs of strategic and applied research and technological development. It would identify currently uncovered and emerging strategic technological and applied research priorities and opportunities, and would propose and implement corresponding programmes. The implementation of these programmes would be assured by the dedicated agency.

ESTRAC would be structured in much the same way as the European Research Council (ERC). The promoters of the European Research Council were able to argue convincingly that the ERC should be managed autonomously, modelled on the successful national research funding councils in many EU member states. The same argument can be made in the case of ESTRAC. There is a rich accumulation of experience and expertise in many member states with regard to the design and management of strategic technology and applied research programmes. Examples are national programme agencies such as TEKES (Finland), VINNOVA (Sweden), SenterNovem (Netherlands), ANVAR/ANR (France), CDTI (Spain), among others. Equally relevant are the numerous examples of extensive national funding accorded to mission-oriented RTOs, for which budgets and multi-year work programmes are negotiated in relation to identified socio-economic needs.

At its launch, we propose that ESTRAC would manage two families of programmes, targeting:

- strategic research alliances between mission-oriented research organisations, in particular RTOs, and
- bottom-up research projects promising significant contributions to technological development and economic competitiveness

⁶ cf. the recommendations (p. 34) of the Expert Group *Evaluation of the Sixth Framework Programme for Research and Technological Development 2002-2006*

⁷ or 17 or 19 ... members

Strategic Research Alliances (SRAs)

ESTRAC's SRA programme would be an ERA structuring and enabling instrument, incorporating three strands or "tracks", intended to:

- build world-class critical research and technology mass in key domains – a bottom-up track;
- support other ERA policy initiatives, e.g. Joint Programming – a top-down track, and
- support and accelerate the reform of mission-oriented RTOs in new and future EU member states.

• The Bottom-up Track: Building World-class Critical Mass

RTOs, as mission-oriented research organisations, have a responsibility to engage in long-range strategic research and development programmes to produce technologies for future application to the benefit of society. Such programmes often have medium- to long-term time horizons (upwards of 5-7 years), are multidisciplinary, and are inherently high-risk. ESTRAC's SRA programme would facilitate the pooling of disciplinary skills and the sharing of risk by transnational groups of RTOs, including universities and industry where relevant, in such longer-range strategic research programmes, while at the same time avoiding duplication of effort in several EU member states. The SRA programme could be particularly beneficial in facilitating the emergence of new, joint research groups, even research institutions, in emerging areas of science and technology.

This proposed SRA programme is similar in many respects to the "Joint Research Initiatives" proposed by the *Expert Group on the Future of Networks of Excellence*⁸. It addresses, too, the failure of past and current ERA policies and instruments to take sufficient account of the potential of applied research organisations, notably RTOs, for producing and supporting European R&D⁹. Additionally, it would help to loosen RTOs' current national "lock-in" and facilitate their internationalisation in response to the globalisation of their customers¹⁰.

The ESTRAC SRA programme should provide financial support not only for preliminary planning and programming work among the participating RTOs and other participants, and staff exchanges, but also a contribution to research funding in order to provide an attractive incentive effect.

• The Top-down Track: Supporting Other ERA initiatives

SRAs can valuably support other ERA initiatives, in particular Art. 169 and Joint Programming initiatives with a societal "grand challenge" agenda. The *European Energy Research Alliance*, established within the SET-Plan, illustrates the need for, and opportunity of, strategic research initiatives to underpin with science and technology major public policy initiatives such as promoting low-carbon and efficient energy technologies. Similar alliances should be formed to support other Art. 169 and the future Joint Programming initiatives to be launched by groups of member states. It is assumed here that such "supportive SRAs" would be funded by the corresponding Art. 169, Joint Programming etc. initiative.

⁸ *Expert Group on the Future of Networks of Excellence*, September 2008.

⁹ cf. the report of the "ERA Rationales" Expert Group.

¹⁰ cf. the recommendations (p. 50) of the Expert Group *Evaluation of the Sixth Framework Programme for Research and Technological Development 2002-2006*

- **Track Three: Facilitating the Reform of Mission-oriented Research Organisations in New and Future EU Member States**

Non-university science in the new EU member states, notably in the countries of eastern and central Europe, was, and to a large degree still is, founded on the “academy” model, with more emphasis on scientific excellence, less on practical application. There remains a need to re-balance the policy mix in these countries.

The third strand of the ESTRAC SRA initiative would target this objective by offering strategy audits of research organisations in these countries and the opportunity to twin with a long-established RTO in another member state as a mechanism for advancing a corresponding strategic reform agenda.

Supporting Technological Development and Economic Competitiveness

The emerging ERA policy landscape seems unlikely to provide a reliable funding mechanism suitable for supporting bottom-up research projects promising significant contributions to economic competitiveness or next-generation and disruptive technologies¹¹. This would be a serious gap in the policy mix. ESTRAC should therefore operate a corresponding programme, which initially would comprise three sub-programmes or tracks.

- **Track One: Tomorrow’s Technologies**

This sub-programme would target 2-3 year projects with a strategic focus on a promising technological breakthrough of plausibly demonstrated, probable, high economic and/or social relevance. There should be no necessary requirement for transnational partnership in the execution of the research, but a demonstrated willingness and strategy for wide-scale dissemination.

- **Track Two: Specific Targeted Research Projects (STREPs)**

The future FP policy mix must provide adequate space for funding applied research aimed at solving practical problems among firms not necessarily operating in high-tech sectors¹², in particular that large part of manufacturing and employment in Europe which is reliant on continually improved process and product technologies for its competitiveness. This ESTRAC sub-programme would support smaller (€2m, two-three year, two or more partner) projects involving partners from at least two participating countries.

- **Track Three: A European SBIR Programme (ESBIR)**

There is broad agreement about the success of the US Small Business Innovation Research (SBIR) programme to support technology-based start-ups and young growth firms¹³. ESTRAC would be the opportunity to put in place a flagship European SBIR programme (ESBIR).

¹¹ The present SME measures that may continue in the new Research Executive Agency are not suited for this purpose, while the EUREKA EUROSTARs programme is more focussed on close-to-market, research-performing SMEs. Some JTIs might provide funding for such projects, but this would hardly represent a comprehensive approach (and, indeed, industry-driven JTIs may sometimes prefer **not** to fund disruptive technologies).

¹² cf. the recommendations of the Expert Group *Evaluation of the Sixth Framework Programme for Research and Technological Development 2002-2006*

¹³ Small programmes more or less based on the US example have been launched in the Netherlands, Sweden and the United Kingdom.

ESBIR would target early-stage start-ups, including spin-outs from RTOs and universities, and, like its US counterpart, would offer support in the successive stages of start-up, development, and market launch.

Following the US model, grants could be awarded in the start-up phase, low-interest loans in the development phase, and no financial support in the market-launch phase (but projects would benefit from 'labelling' which can serve to attract external funders, e.g. venture capital).

The rationale for a European ESBIR is the flagship quality of a continent-wide programme, facilitating broad competition among the best proposals, and achieving a critical mass of proposals and programme management competence which smaller countries and regions will be unable to achieve.

ESBIR could also be an opportunity to bring together an important element of the current CIP and the FP. The approximately €1 billion of CIP funding presently managed by the EIB for on-lending to national and regional financial institutions in support of SMEs could be used to provide the loan funding for the development phase of ESBIR. Such an arrangement would ensure a "joined up" support programme¹⁴ (from start-up to market launch) and, contrary to the present manner of deploying CIP funds, would produce visible outcomes (successful new companies, products and services) from European funding.

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¹⁴ cf. *Evaluation of the Sixth Framework Programmes for Research and Technological Development 2002-2006: Report of the Expert Group*