

Opinion of the Economic and Social Committee on the 'Communication from the Commission to the Council and the European Parliament — Innovation in a knowledge-driven economy'

(2001/C 260/21)

On 3 October 2000, the European Commission decided to consult the Economic and Social Committee, under Article 262 of the Treaty establishing the European Community, on the above-mentioned communication.

The Section for the Single Market, Production and Consumption, which was responsible for preparing the Committee's work on the subject, adopted its opinion on 27 June 2001. The rapporteur was Mr Dimitriadis.

At its 383rd plenary session (meeting of 12 July 2001), the Economic and Social Committee adopted the following opinion by 41 votes to two with six abstentions.

1. Introduction

1.1. In the ESC's opinion, the Commission's proposal setting objectives for enhancing innovation in the Union is extremely important.

1.2. The importance of innovation was already acknowledged in 1995 in the Green Paper on innovation⁽¹⁾ and then in 1996 in the First Action Plan for Innovation in Europe⁽²⁾.

This action plan highlighted three prime objectives:

- to create an innovation culture;
- to establish a legal, regulatory and financial framework conducive to innovation;
- to gear research to innovation.

1.3. The March 2000 Lisbon European Council acknowledged the importance of innovation for the economic and social development of the Union, and focused its innovation enhancement initiatives on the knowledge-based economy. It recognised the Union's persistent 'innovation deficit' despite the progress made since 1996, and pointed out the need to reap the maximum benefit for innovation from research and to establish a friendly environment for developing innovative businesses.

1.3.1. This was the essence of the strategic objective set in Lisbon for the next decade: to become the most competitive

and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion.

1.4. Boosting innovation was one of the fundamental aims of the fifth RTD framework programme⁽³⁾. Building on the results of the framework programme will also form a major part of the action.

1.5. The ESC is of the opinion that the Commission's communication to the Council and the European Parliament, 'Innovation in a knowledge-driven economy', is a step in the right direction. In the light of the Commission communication 'Towards a European Research Area'⁽⁴⁾, aimed at enhancing the efficiency and innovative impact of Europe's research effort, the ESC reaffirms the systemic view of innovation as defined by the First Action Plan⁽²⁾. According to the systemic view, innovation is born out of complex interactions between many individuals, organisations and environmental factors, rather than a linear trajectory from new knowledge to new product; in addition, this helps to reiterate the message that the goal is to enhance cohesion in the Union, by coordinating national efforts. The communication lists five individual objectives, which the ESC believes to be appropriate, though possibly rather ambitious. For this reason, the ESC calls on

⁽¹⁾ COM(95) 688 final (ESC opinion: OJ C 212, 22.7.1996, p. 52).

⁽²⁾ First Action Plan for Innovation in Europe — Innovation for Growth and Employment, COM(96) 589 final.

⁽³⁾ Commission working paper on the specific programmes of the 5th RTD framework programme (1998-2002), COM(97) 553 final, 5.11.1997; Specific programmes, COM(98) 305 final and COM(98) 306 final, both OJ C 260, 18.8.1998; ESC opinion: OJ C 407, 28.12.1998, pp. 123-159.

⁽⁴⁾ COM(2000) 6 final of 18 January 2000; ESC opinion: OJ C 204, 18.7.2000, p. 70.

the Council to ensure that sufficient financial resources are earmarked, and stresses the need to bolster innovation-promotion activities within the framework of the sixth RTD framework programme. The ESC also believes that the communication should tie in with the conclusions of the communication on 'Making a reality of The European Research Area: Guidelines for EU research activities' and the corresponding ESC opinion⁽¹⁾.

2. Summary of the communication — main aims

2.1. The communication is based on EUROSTAT⁽²⁾, OECD and other third country statistics and includes the first outline and evaluation of European innovation performance. As the overall results give no cause for optimism, the communication stresses the need for Member States to step up their efforts to enable themselves to make the most of the opportunities offered by the knowledge-driven economy and rise to its challenges. To achieve that goal it will be necessary to devise methods for marketing new products and services and responding immediately to changes in demand, in order to sharpen Europe's competitive edge at world level, by means of innovation. Not only must the European Union remove the obstacles to innovation, in order to motivate and hold on to European scientists and investors, but it must also support and strengthen Member States' school and higher education systems, with a view to nurturing the appropriate skills and an appropriate spirit of innovation. Emphasis must also be placed on developing technology dissemination and absorption methods, especially for SMEs, and on encouraging traditional industries to take new ideas on board and build up their capacity for innovation, given that when it comes to the knowledge society, any sector and any company can become a vehicle for knowledge.

2.1.1. The Commission also stresses the importance of disseminating information and communications technologies throughout the service sector, in order to improve its innovative capacity.

2.1.2. Meanwhile, the European Commission believes that with worsening environmental problems, the climate is right for encouraging more innovation, in order to meet the need

to develop new products and services that can improve the use of resources and contribute to environmental protection, while paving the way to sustainable development.

2.1.3. Lastly, the Commission notes that there is a perennial lack of cohesion, in that performance in the Member States and regions differs enormously. As long as the European innovation system remains fragmented, it will be impossible to maximise the benefits of the internal market.

2.2. The communication from the Commission to the Council and the European Parliament refers to five general objectives that cover individual goals and national policies in the area of innovation and form the Europe-wide framework for innovation development; they are:

- coherence of innovation policies;
- a regulatory framework conducive to innovation;
- encourage the creation and growth of innovative enterprises;
- improve key interfaces in the innovation system;
- a society open to innovation.

2.2.1. These five objectives reflect current priorities for the enhancement of innovation in Europe and tie in with the consensus reached by the Lisbon European Council on general policy directions.

3. The importance of innovation

3.1. The ESC agrees with the communication's conclusion that there is an innovation 'deficit' in the Union and that, although the Member States' experience is growing, the knock-on effect of that experience has yet to be seen. The five objectives listed in the communication are a step in the right direction, which, in the ESC's opinion, should be a recognition of the importance of innovation policy on the part of both the national governments and the European public. The ESC has identified four crucial principles for encouraging innovation in Europe:

- information on innovation;

⁽¹⁾ ESC opinion: OJ C 204, 18.7.2000, p. 70.

⁽²⁾ EUROSTAT: Science, Technology and Innovation — Key Figures 2000.

- a broad awareness of its value;
- a functional organisational and regulatory environment;
- coordination of activities at national (horizontal) and cross-sectoral (vertical) level.

3.1.1. The communication's five objectives serve these principles well, but in the ESC's view, a few points require further amplification; this is provided below in points 3.2 to 3.6.

3.1.2. First and foremost, the ESC would emphasise the need for reliable statistical data. The Commission has based its communication on figures that date back to 1998 and in some cases even earlier (e.g. Austria 1993). This is unacceptable. Up-to-date, reliable and detailed data are essential. The Committee feels that it is inadmissible that it should be obliged to give an opinion without access to the latest figures as this could compromise its judgement.

3.1.3. The Commission communication ought to offer a more practical definition of innovation. For instance, products that today are considered to be at the cutting edge of technology may not be tomorrow. The meaning of innovation must be made quite clear in the communication.

3.1.4. The significance of knowledge as a unique factor in safeguarding the competitive edge of society is not given sufficient attention in the Commission communication despite its central place in the title. The ESC cannot stress the value of knowledge strongly enough. Furthermore, the distinction between innovation and research as a product of knowledge must be highlighted. The communication does not really tackle this point.

3.1.5. Human resources are an essential prerequisite for the establishment of a science-based society. For this reason, the first step must be to improve education systems and scientific education in particular — for both teachers and pupils — as well as job opportunities in science. Scientific careers must be attractive to scientists and reward them satisfactorily, in

accordance with their merits, in order to motivate talented pupils and persuade them to go through the demanding, difficult but interesting training period. The right job opportunities are essential as are social status and financial standing, given the importance of scientists and engineers for the future of Europe.

3.2. With regard to Objective I, 'coherence of innovation policies', the ESC believes that the convergence of national innovation policies is a central issue. It feels that the targets set in the communication are positive but not as ambitious as they should be. The benchmarking of innovation policies is necessary, but it alone is not enough to achieve real cohesion. The ESC urges the Commission to take additional action by drawing up a plan to make Member States' national innovation programmes accessible to all EU operators and companies regardless of the location of their headquarters or their area of activity. This possibility, in combination with the first action of the first objective — 'implement a framework for dialogue, coordination and benchmarking of Member State innovation policies and performances' — could speed up convergence in the Union. The ESC believes that a plan of this kind could be implemented over a period of four years (2001-2004).

3.2.1. Coordinating, harmonising and fostering interaction between the various national and European programmes and their organisations and principles is especially important. Given the contribution and interest of the organisations involved, this type of approach would have to be a radical and ongoing process with satisfactory room for manoeuvre and accompanied by reciprocal trust and cooperation, avoiding unproductive centralisation.

3.3. On Objective II, 'a regulatory framework conducive to innovation', the ESC agrees that innovation initiatives must be facilitated by creating a flexible regulatory framework, without meanwhile ignoring the need for regulations. The ESC would urge the Member States to implement the action rapidly, to apply tax measures, in accordance with Articles 87 and 88 of the Treaty, and to encourage private investment in research and innovation and the employment of researchers by the private sector, and it calls on the Commission to present reports on the efficiency and progress of this measure. There is an urgent need to cut through red tape of all kinds.

3.3.1. More specifically, the ESC stresses the need to establish a high level of communication between SMEs and universities and research centres in the Member States. The barriers that prevent such communication must be removed. The companies concerned should work with the universities, and vice versa, to achieve synergy. Furthermore, the EU must reduce the bureaucratic obstacles blocking access to scientific programmes, and European programmes must encourage cooperation between universities and companies.

3.4. Objective III, 'encourage the creation and growth of innovative enterprises', is the most important for the Union. Despite the good performance of the Union over the last three years, it should be stressed that in 1999 the United States invested more than three times as much venture capital in technology as Europe, and it is worth noting that the corresponding growth rate in the US compared with the previous year was 108 %. In the ESC's view, there is no appropriate funding framework to provide backing for innovative new companies or start-ups. There is no European-level mechanism organised whatsoever for the generation of venture or seed capital. In addition, the regulatory framework poses obstacles for new and small businesses taking part in RTD or innovation programmes, which more often than not act as a deterrent. The ESC believes that, as part of its effort to facilitate the access of start-ups to public tendering procedures, Community programmes (and their results) and the 'Innovation 2000 Initiative' of the European Investment Bank (EIB), the Commission should:

- devise (in conjunction with the EIB) a plan for attracting and channelling venture capital;

- promote research into ways of removing restrictions on funding from RTD and innovation programmes.

3.4.1. As part of the action to 'encourage networking activities', such as the network of regions of excellence for the creation of enterprise, the networks for training and support services (incubators, seed funds, etc.), and the development of a European electronic directory of innovative start-ups, the ESC would encourage the Commission to work towards establishing a European forum for licences and innovations. This forum would have the task of giving the

broadest possible support to innovative activity and generating value added from the prospective cooperation. Participation in the forum would have to be completely voluntary and in no event should there be barriers to or any kind of restriction on the innovative activities or endeavours of European companies or individuals.

3.4.2. The ESC would emphasise the value of centres of excellence. The USA's superior position is not the result of a generally higher level of education compared with Europe. On the contrary, Europe has a multitude of educational establishments that are of a higher standard than their US equivalents. The superiority of the US stems from its capacity to concentrate its best resources in specific centres of excellence. The EU should do the same.

3.4.3. The development of human resources is an important step in promoting innovation and forming a knowledge-based mind-set. In contrast to the US, European research institutes are facing problems attracting scientists because of low salaries and generally unattractive working conditions in research. The brain-drain to the US is extremely damaging. We must not forget that knowledge begets knowledge. The centres of excellence will play an important role here. The ESC believes that drastic countermeasures are needed to address the current situation and encourage an influx of scientists from third countries. An attractive working environment and preferential treatment should be provided for researchers. The long-term goal should be to attract scientists from non-EU countries to the EU, especially from countries that are advanced in innovation such as the US and Japan.

3.4.4. The Commission has published statistics that demonstrate that the European Union as a whole is lagging behind the US and Japan in terms of the number of researchers per 1 000 workers. Various accounts from within the Union paint the same picture and testify to a more general shortage of trained research staff in both public and private sectors of the economy. The ESC would welcome a Commission measure to give special priority to actions to support the training of new researchers in cooperation with the Member States, with a view to establishing a European research area made up of a number of distinct centres of excellence. As this type of training is time-consuming, action in this area is imperative.

3.5. The Commission and others have been studying for some time now the transfer of technical knowledge from the point where it is generated to the point where it is utilised in production. The ESC agrees fully with the actions listed in the communication under Objective IV — 'improve key interfaces in the innovation system', in particular:

- bolstering regional initiatives, with the involvement of professional organisations and the European Innovation Relay Centres (IRC);
- invigorating life-long learning;
- directing research bodies in procedures for promoting knowledge;
- coordinating knowledge production centres in a variety of ways (knowledge networks, international links);
- disseminating good practice.

3.5.1. By far the most effective form of technology transfer is that between people who have been involved in acquiring particular knowledge and then using it to develop products, and/or who have worked on product development and have then been involved in locating resources, new processes and technologies. This type of exchange is rare, however, owing to differences in work, even nationally, differences in the number of costs restricting mobility, and differences in career-related criteria and choices. In the case of cross-border mobility, obstacles are also created by still insufficient co-ordination of national social welfare systems and the frequent lack of mutual recognition of academic qualifications and periods of study and training abroad. In the absence of incentives to facilitate mobility, scientists are often discouraged.

3.5.2. The ESC would strongly encourage the promotion of benchmarking in order to improve the effectiveness of knowledge transfer activities.

3.6. The ESC agrees that promoting widespread awareness of the importance of innovation, as outlined in the communication under Objective V — 'a society open to innovation' — is important. However, this task is extremely difficult and

somewhat ambitious. The communication recognises the important role of the media, but gives no practical suggestions for how that role should be played out. The ESC suggests that the Commission should add a further action and look into drawing up a plan for the use of the media to this end.

3.6.1. Broad social awareness on a practical level of the meaning of innovation is essential but will be impossible to achieve without modernising basic school curricula and providing training. Furthermore, as universities, owing to their position and vocation, are showing a degree of success in this respect, the emphasis must shift to the lower levels of education, namely primary and secondary schooling. Training must focus to begin with on teachers, who in the ESC's opinion show a significant lack of awareness and appreciation of the value of innovation. This is owing in part to a lack of vocational training for teachers, with the result that they are unable to be the vectors of the new knowledge that is clearly the only possible means of promoting innovation. Subsequently, an organised plan for promoting the idea of producing new knowledge should further the objective of providing the EU's young people with a real understanding of the need for innovative creativity. This process will be demanding, will take a long time and will require considerable patience before it bears fruit. Nevertheless, the ESC believes that this is the only way to reverse the EU's current innovation deficit.

3.6.2. The role of the mass media, the Internet included, in spreading the value of innovation is highly important. The ESC is convinced that the approach taken by the media is biased owing as much to the complex nature of the issue at stake as to the media's own specific interests. The Committee believes that this state of affairs must change, while also recognising the difficulty of the task. It therefore urges the Commission to conduct a study into methods of promoting the importance of innovation by using means of influencing public opinion and tailor-made programmes.

4. The 'European innovation area'

4.1. In November 2000, in Lyon, France, the French ministry for the economy, finance and industry, along with the ministry for research, hosted a meeting⁽¹⁾ for scientists, entrepreneurs and innovators representing the Member States

⁽¹⁾ Annual European Forum for Innovative Enterprises, followed by the Colloquium 'Towards a European innovation area', Lyon, France, 21 November 2000.

of the European Union. The meeting was followed by a second European Commission forum on innovation and enterprise. The seminar pinpointed the 15 most important ideas for the future success of European innovation. These ideas, with which the ESC is in full agreement, are the following:

- train up on innovation and foster entrepreneurship;
- identify the new skills needed and adapt the education systems accordingly;
- develop the tools and services of the information society, Internet included, for the purposes of social inclusion;
- develop public scientific awareness;
- promote organisational innovation;
- support the early stages of innovative businesses;
- mobilise private financing for innovation;
- coordinate the national and European support mechanisms for innovative companies;
- promote the development of European venture capital;
- decentralise European support for innovation towards SMEs;
- boost the R&D effort in Europe;
- develop SME innovation on the basis of research results;
- introduce a European patent suited to applicants' needs;
- foster European researcher mobility;
- enhance Europe's appeal to the world's best researchers.

4.2. The ESC would draw special attention to the need to establish a European patent that is flexible and accessible to the pioneers of innovative applications, and would refer to its detailed opinion on the subject⁽¹⁾.

4.2.1. The ESC realises that the academic and business worlds differ in the methods they use to address the production of knowledge. The former prefers immediate publicity as this process brings prestige and is a criterion for career advancement. The latter does not want to publish at least until the discovery has been protected by intellectual property rights. There is in essence a clear conflict of interests, which is liable to keep the two communities at a distance. The ESC suggests that use should be made of an appropriate 'novelty grace period' between publication by the inventor and the patent application. This is one possible way of bridging the existing gap.

4.2.2. Furthermore, the organisational structures of publicly-funded bodies and universities and privately-run centres are still out of synch, even within individual Member States. The organisations responsible for protecting intellectual rights and the technology transfer institutes can ensure on one level that know-how developed through applications in publicly funded organisations is used for product development in industry.

4.3. Lastly, the ESC would encourage the Commission to step up its efforts to ensure that Commissioner Liikanen's statement at the Lyon meeting, that the Commission had an important role to play in promoting innovation and restoring confidence, will be proved right.

5. Conclusions

5.1. The importance of encouraging initiatives to promote innovation has already been demonstrated.

⁽¹⁾ ESC opinion on the Proposal for a Council Regulation on the Community patent COM(2000) 412 final — 2000/0177 (CNS), OJ C 155, 29.5.2001, p. 80.

5.2. The Commission's communication makes a positive contribution to this end, but certain points must be developed further.

5.3. In the ESC's opinion, the promotion of initiatives to support innovative endeavour in the Union is of fundamental importance, and it places special emphasis on the need to facilitate financing procedures, harmonise the policies of the Member States and work towards a more flexible regulatory framework.

5.4. The ESC warmly welcomes the programme's broad lines of action. These seem to be well planned and targeted, and are of monumental importance to the European family of nations. However, additional resources will inevitably be required.

5.5. The strategic objectives mentioned above may be overly ambitious. Nevertheless, the ESC believes that the communication will make an important contribution to fostering innovation in the broader e-Europe initiative, and therefore urges the Council to ensure that sufficient financing is made available.

5.6. The ESC's suggestions relating to structural changes listed and set out in this opinion can be summed up in the following points:

5.6.1. The national R&D programmes of all EU countries should be opened up immediately to all interested research centres in the EU, irrespective of the country they operate in.

5.6.2. In the long term, the importance of the knowledge factor must be taught in EU Member State schools. University and school lessons must be harmonised and adjusted accordingly as a precondition for scientific integration in Europe and improved mobility for scientists.

5.6.3. There is a need for long-term technical/vocational training based on uniform European models and lifelong learning programmes, arising from the importance of knowledge production.

5.6.4. A methodology and model programmes must be devised to promote the idea of innovation via the mass media.

5.6.5. Middle and lower ranking government staff, especially in local government, should be given training in environmental awareness with a view to exploiting new technologies.

5.6.6. The procedures for obtaining a European patent must be made easier, simpler, less time-consuming and less expensive.

5.6.7. An appropriate legal and regulatory framework should be set up to enable research results to be published by the inventor within an appropriate period ('novelty grace period') before patents are applied for, without jeopardising originality. This would remove major obstacles to communication and the sharing of experiences in the public and private research sector.

5.6.8. SMEs must be supported and defended in their research activities with a view to switching from a defensive to a risk-taking business culture.

5.7. The ESC's proposals on the establishment of centres of excellence can be summed up as follows:

5.7.1. A mechanism is needed for the independent generation of European start-up and venture capital, modelled on the US example, without unjustifiable restrictive regulations of the type governing the EU's current innovation programmes.

5.7.2. There should be European centres of excellence for innovative activity, using open and transparent procedures to bring together researchers from universities, non-university institutes and industry. The favoured use of English as a common language could be an important factor here.

5.7.3. University-industry researcher mobility programmes must be stepped up, doing away with the current atmosphere of introversion and exclusivity.

5.7.4. There should be more programmes designed to attract non-EU scientists to research positions in European industry and in the European academic community.

5.8. The communication cannot achieve the strategic objectives set in this respect as it stands, or even with the improvements proposed by the ESC in this opinion. It can,

however, contribute to the development of these strategies as part of an overall drive in this direction.

Brussels, 12 July 2001.

The President
of the Economic and Social Committee
Göke FRERICHS
