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Science, society and the citizen in Europe

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SUMMARY

This document looks at various topical issues that are causing growing concern to individuals and policy-makers alike and are encompassed under the general heading of "Science, society and the citizen": The central focus is how to implement research policy around the real aims of society and fully involve society in seeing through the research agenda.

How should we manage risks? What implications arise from adopting the precautionary principle? How can ethical issues and the ethical consequences of technological progress be taken into account, at the same time as the need for freedom of research and access to knowledge?

What needs to be done in order to underpin the dialogue between science and society, to improve the public's knowledge of science, to increase the interest of the young in scientific careers, and to expand the role and place of women in science and research?

The document sets out to:

- spark a debate on these issues at European level by providing a frame of reference for discussion;
- put forward suggestions for action, based on succinct analyses, in the various areas at national, regional and European level;
- seek proposals for new ways of thinking about these issues and actions that could be taken.

The outcomes of the broad debate this document stimulates will be used by the Commission as the basis for policy initiatives designed to lead to concrete actions.

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1 NEW RELATIONSHIPS BETWEEN SCIENCE AND SOCIETY

1.1 Paradoxical relationships

The relationship between science and society today is something of a paradox. First of all, science and technology are at the heart of the economy and society, and both are having an increasingly positive effect on the lives of people in Europe.

Expectations of science and technology are getting higher and higher, and there are few problems facing European society where science and technology are not called upon, one way or another, to provide solutions.

Conversely, advances in knowledge and technology are greeted with growing scepticism, even to the point of hostility, and the quest for knowledge no longer generates the unquestioning enthusiasm that it did some decades ago.

Searching questions are being asked of the social and ethical impact of the forward march of knowledge and technology and the conditions under which the basic choices are made (or are not made) in this area.

The importance assumed by what have been dubbed “science/society” issues is the product of several converging trends.

Developments, first and foremost, in knowledge and technology, in the form of man's growing capacity to act at the very heart of both animate and inanimate processes, and on a global scale, or in relentless process of scientific and technical breakthroughs at the cutting edge of scientific fields and disciplines.

Developments, secondly, in scientific, technological and social relations, which are undergoing a threefold change: social change affects the research agenda by generating new needs; major economic, financial and commercial interests are increasingly linked with the advance in knowledge; this progress is getting faster, it is challenging society to keep up, and more and more it is calling into question the basic values and principles of social life.

Developments, finally, in a more general social and political sense, in the form of a greater capacity among the better-informed and better educated members of the public to apply their critical faculties to developments they regard as being imposed rather than desired, together with the erosion of confidence in political authority.

These changes and the tensions they cause are a warning to scientists, political authorities, economic and industrial decision makers and members of the public to establish new relationships among themselves.

Modern science has developed on the basis of an unspoken “contract” between science and the institutions taking responsibility for it (universities, industry, governments), on the one hand, and society and the public, on the other.

New relationships are needed that fit the new mould of science, technology and society.

These have to change because of the impact of science and research on competitiveness, growth and jobs and on the quality of life in Europe.

All the more so, given the central role they play in the knowledge-based economy and society that the European Union committed itself to building at the Lisbon European Council.

This role has led the Heads of State and Government to confirm the projected creation of a “*European research area*” and put it on the EU agenda in the form of the central plank of Europe's knowledge-based economy and society.

As the recent Communication entitled “*Innovation in a knowledge-driven economy*”¹ stresses, the Lisbon objectives will be achieved only by an economy geared to innovation and a society fully committed to it.

There is a need to develop an open mind to innovation, in full knowledge of the associated benefits and risks, and to create an open dialogue between researchers, industrialists, policy-makers, interest groups and the public as a whole.

Since this will affect Europe’s economic future, scientific/social issues in Europe also have to be looked at against the backdrop of governance in Europe.

1.2 Science and governance at European level

The European Commission recently turned its attention to the matter of European governance, focusing on the two issues of new forms of involvement in public affairs and different levels of power and decision-making in Europe. It will deliver the results in the form of a White Paper by the summer of 2001.

The term governance is taken as meaning new forms of governing and administering public life based on interaction between traditional political authorities and “civil society”: private operators, public bodies and citizens groups.

The issues of “Science, Society and the Public” provide a good example in this consideration of governance for a number of reasons:

- science and technology represent one of the forces most clearly reflecting social change, i.e. one of the factors over which societies must acquire and exercise genuine control;
- the questions arising in this area are among the most complex facing society, owing to their technical nature, the uncertainties surrounding them, the know-how needed to deal with them and their often diffuse nature;
- the relationship between decision-makers, experts and the public affects this area with particular force, just like the new forms of involvement in the public debate and the responsibility of our elected representatives.

Here, as elsewhere, European governance will have to combine new ways of involving the different echelons of society and the traditional forms of government and representative democracy.

One aspect of the European dimension in these issues is the existence of specific traditions and values at the heart of European society. Another is Europe's diversity, which has to be

¹ COM(2000) 567.

maintained while trying to reconcile points of view and promote a common vision and consistent approach where needed.

This need for a consistent approach may be for various reasons. As the recent food crises showed, for example, the problems arising in this area or requiring action in scientific terms, very often occur simultaneously throughout Europe.

Where regulations are concerned, an increasingly frequent scenario, it is also more often than not at European level, especially as a result of the internal market.

And on several of these issues (such as biotechnology or matters linked to environmental, climate and energy problems), it is in the European countries' interest, indeed, it is a requirement, to map out a common position for a fruitful dialogue between countries in other parts of the world, particularly in international forums.

An adequate understanding of these matters could also help Europe to give science and research a part to play, at international level, in developing peaceful relations among countries, and even in preventing or resolving conflicts.

1.3 The need for debate

The issues presented under the umbrella of "Science, Society and the Public", in the various aspects of relations between science and governance, are major causes of concern in today's Europe.

Dealing with these is a responsibility shared between civil society, the national public authorities and, in certain cases, the Union itself.

The aim of this document, which is intended to provide food for thought, is to settle on a way in which these issues can and must be tackled at European level and from a European viewpoint.

By bringing all the aspects of "Science and society" together for the first time at European level in a single document, the aim is:

- to launch a debate on these issues at European level by offering a focal point for discussion;
- to put forward suggestions for action on the various subjects at national, regional or European level, on the basis of succinct analyses;
- to seek proposals concerning new ways of thinking and action to be taken.

This document does not therefore set out to propose immediate measures, especially not measures that form part of the EU's research projects.

Rather, the Commission will use the results of the broad debate this document stimulates to take policy initiatives designed to lead to concrete action.

2 BRINGING RESEARCH CLOSER TO SOCIETY

2.1 Structuring research policies around society's aims

Research policies must have structuring principles that are geared to the aims of society and make sense to the public in general.

In Europe one of the topics that can play this part is the task conferred upon the Union by the Heads of State and Government at the Lisbon European Council: *“to become the knowledge-based economy that is the most competitive and most dynamic in the world, that is capable of sustainable economic growth, accompanied by both a quantitative and qualitative improvement in jobs and greater social cohesion”*.

Another, for example, is the principle of “sustainable development”. This has three facets: the environment, the economy and society in a wider sense.

Following the Lisbon European Council, the EU embarked on a process of structural reform of the economy, employment, innovation and social cohesion by way of an integrated approach in a common frame of reference.

The Commission is also making an effort to provide an operational definition of the idea of sustainability in the broader sense, and at the very least in order to lay down the criteria for its application in the different fields. The results will be set out in a Communication on “sustainable development” prepared for the Gothenburg European Council.

In more general terms, the way in which socio-economic aims shape the implementation of programmes and national and European research policies should be subjected to a comparative examination, in particular as part of the benchmarking exercise carried out in the light of the conclusions of the Lisbon European Council.

2.2 Involving society in the scientific venture

For a long time the research system operated on the assumption that science spontaneously produced knowledge that could be used by society, and that this knowledge could be converted into useful applications without intrusion by its beneficiaries.

Nowadays scientific knowledge and technological know-how are no longer the sole result of the activities of specialised institutions. They are produced within a very broad spectrum of organisations and structures and of networks encompassing research bodies and the users, both public and private, of the products of scientific endeavour.

The involvement of patients' associations, transport user groups or consumer organisations in defining and monitoring research activities and programmes brings research and society together and helps to ensure that results match needs.

While making sure that this research retains enough inquisitiveness and impartiality, without which the cutting edge of knowledge will become blunt, the involvement of representatives of civil society needs to be encouraged and increased in the various stages of the research venture, particularly in defining the priorities of publicly-funded research.

Another aspect of the problem of adapting research policies and, in a broader sense, science policies to society's needs is the matter of the conditions under which researchers, the scientific community and industry are involved in any debate in this area, particularly the debate on priorities.

Various consultative and advisory bodies perform this function at national and European level in the form of academies or specialist bodies set up within governments and parliaments.

In recent years there have been successful attempts to involve users in the definition and implementing of research programmes, especially EU programmes. These must be stepped up, care being taken to maintain the efficiency of the research projects already in progress.

There should be comparative studies of the lessons to be drawn from both European and national experience in this area in order to promote the dissemination and application of best practice.

With the help of a high-level group of experts the Commission is also currently engaged in defining the optimum form for a scientific advisory structure within the European institutions. This will help in the defining and implementing of research and scientific policies at European level.

Various factors militate in favour of formulas based on the networking of existing national and European structures.

2.3 The benefits of foresight

One of the acknowledged merits of foresight exercises and Delphi method surveys is to mobilise broad sections of all the parties interested in research, to give collective thought to priorities and thus to prompt discussion.

The mushrooming of initiatives in this area in the EU, as in technological assessment, is richly rewarding.

The first steps have been taken towards making better use of existing potential and achieving more consistent and co-ordinated implementation of activities in this area: networking of existing specialised institutions in Europe around the Joint Research Centre's IPTS; setting-up of the EPTA network of specialist bodies within the national parliaments, in association with the European Parliament's STOA Bureau.²

The supranational scale of many of the problems and the need to develop technological policies at European level, along with the scope for achieving economies of scale, call for platforms for disseminating the results of the national exercises and an exchange of experience, joint foresight exercises on certain common-interest topics, and the development or continued development of technical tools (indicators, statistics, socio-economic models) on a European scale.

² IPTS: Institute for Prospective Technological Studies; EPTA: European Parliamentary Technology Assessment Network; STOA: Science and Technology Options Assessment.

2.4 The role of economic, social and human sciences

By using scientific method and its systematic approach towards understanding phenomena affecting society, the economic, social and human sciences can help to provide better understanding and management of scientific development.

Although carried out for many years in an essentially national forum, research in this area been taking on a more European dimension for some years now.

Work on a European scale, often based on comparative studies, has begun on subjects such as the operation of the internal market or the effects of the single currency, employment policies, regional-development matters, problems of social inclusion or cultural minorities.

These efforts must be continued and extended to new areas, with particular emphasis on:

- concentrating sufficient resources on new areas of inquiry emerging at the European level in connection with EU policies (employment, education, justice and internal affairs, to quote but three examples), starting with subjects related to the actual issues outlined in this document: risk, its perception and its economic and social implications; governance and the science/society dialogue; plus phenomena such as the emergence of the "virtual society";
- taking greater account of the specific contribution that the human sciences can make, especially given the role played by languages, history and cultural realities in European society;
- merging activities in these areas with activities in the exact and natural sciences, incorporating the results in the decision-making process and making more use of them together with the users.

This effort is required at both national and European levels, starting with greater consistency of the work conducted in the various forums, learning from action undertaken in this area, promoting comparative study and spreading best practice.

3 USING SCIENTIFIC AND TECHNOLOGICAL PROGRESS RESPONSIBLY

3.1 Risk management

Societies in the past lived constantly under the threat of natural disasters. Many hazards that society now faces are of a different kind altogether in that they are related to human activity.

From the ascent of the technological society in the years following the Second World War up to the end of the 1980s, technological risk has been presented, and basically perceived, more often than not in terms of disasters, such as oil or chemical spills. As several recent events have served to remind us, this aspect of technological risk still very much applies.

Attention has focused in more recent years on another form of man-made risk, which is with us on a more day to day basis and perceived as being far more insidious because it is often invisible and appears in the long term: environmental or health hazards which generate fear all the more because they are much closer to home in terms of our everyday lives.

Everyone knows where the problems are: potential hazards arising in the nuclear industry, eating contaminated food, electromagnetic waves in their different forms, climate change, etc. The problems sparked by these hazards are complex and manifold. They have to be characterised and the measures identified that are needed to protect human health and the environment. These measures also have to tie in with the actual state of the art. People today expect new scientific and technological developments to have been subject to a risk analysis before being introduced on a broad scale.

Such real or imagined threats also have to be put into perspective and balanced against the benefits that science and technology bring to society in general, and to each individual in particular.

A distinction also needs to be made between hazards due to new scientific and technological developments and hazards due to industrial practices or criminal negligence. But either way, we expect and demand that science provide us with the information needed to assess the risk and limit its impact.

Everyone knows, on the other hand, that the perceived risk is often far removed from the actual risk and that the degree of risk acceptance varies according to the respective circumstances and uses. However exact these claims may be, it nevertheless remains true that, generally speaking, society has become less tolerant towards risks - and this has to be taken on board.

The underlying question as regards risk is therefore: what type and what amount of risk is society in general and each individual in particular prepared to accept? Inevitably the answer given is broadly political.

On the whole, social management of the type of risk referred to involves a combination of factors and stages:

- risk assessment, using the best scientific expertise available, in the form of independent and clear advice;

- risk management, through measures designed to keep it at an acceptable level to society, with an adequate level of protection;
- risk communication, by way of new forms of collective thinking and democratic discussion on the relative risks and benefits of using technology, this being the main platform of the science/society dialogue.

3.2 The precautionary principle

A concept required to play a crucial role is the “precautionary principle”. Formally emerging in the context of environmental issues, but actually in application in health protection for some time now, the precautionary principle now officially resides in areas where policy-makers have to deal with scientific uncertainty.

The Commission communication on the precautionary principle,³ which was presented in February 2000, describes how the precautionary principle is applied in various domains. This principle forms part of the general approach to risk analysis and management. It provides guidelines on the application of the precautionary principle that will help to establish a common view of the best way of assessing and managing risk and addressing issues where scientific facts are not able to provide full characterisation and assessment.

As a risk management tool, the precautionary principle is a principle of how to act in the face of scientific uncertainty.

Generally speaking, however, the ultimate aim has to be to reduce scientific uncertainty as far as possible and achieve the intended level of protection. Decisions have to be based on the latest knowledge and that knowledge has to be complete, certain and accurate.

In an uncertain world, with complex phenomena governed by the laws of probability, “zero risk” is a rare commodity in reality and absolute certainty is often impossible to achieve.

Using the precautionary principle is bound to have a major impact on the research agenda, both nationally and at European level.

This will mean a certain amount of specific research: development of more precise and more reliable risk-assessment methods; production, validation and regular update of the specific know-how needed to forestall crises and react when they occur, as back-up for regulations and to monitor their implementation.

3.3 The matter of expertise

Expertise is a difficult area due to the nature of the scientific problems at issue and also to the particular way it works, with experts called upon to give assessments that are bound to include subjective elements of some kind. A further complicating factor in Europe is the existence of several different bodies at national and European levels.

The issue of scientific expertise in the public debate on hazards also brings the problem of responsibility in this area into sharp focus, in both senses of the term: "responsibility" and "accountability". Responsibilities enter the stage on several levels:

³ COM (2000) 1

- responsibility of the experts whose assessments and recommendations never actually reflect the state of the art, even if they draw support from it;
- responsibility of the political authorities on whom it ultimately rests to determine which decision is best likely to serve the public interest.

One aspect that should receive particular attention is access to expert opinion, where the rule should be that opinions delivered on matters of public interest are accessible to the public.

On this matter, as on several other aspects of risk management, the action taken in Canada in the wake of the SAGE report ("Scientific Advice for Governmental Effectiveness") by the CEST (Council of Experts on Science and Technology) warrants examination and could usefully serve as a source of inspiration.

One of the aims in the various areas where safety and security are issues should be the gradual establishment of a European reference system.

The various building blocks for a system of this kind might be as follows:

- *rationalisation and greater co-ordination of expert bodies and structures already in existence in Europe, by way of a comparative analysis of good practice, both in Europe and throughout the world, and experience gained at national and European levels;*
- *networking of centres of excellence operative in the relevant areas in Europe, to make for an ongoing exchange of scientific know-how;*
- *in lines with suggestions made at national level, permanent platforms of exchange for experts in differing disciplines, to build up a common "culture" of expertise in the areas concerned.*

The networks of national centres of excellence created under the Union's research programmes, along with the Joint Research Centre and the areas it covers, will have a major role to play in the establishment of this system.

The same goes for the future "European Food Authority" which the Commission has proposed to set up.⁴

3.4 Ethics

Not everything that is scientifically possible and technologically feasible is necessarily desirable or admissible. Several aspects of the advance of know-how and technology call our basic values and principles into question: respect for life and the individual in connection with cloning and certain aspects of genetic engineering; personal privacy as regards certain applications of information technology; our obligations towards our future generations, with the prospect of changes to the climate and the global environment, etc.

The ethical impact and consequences of scientific and technological progress are particularly visible in the areas of genetics and biotechnology, although by no means just in these two

⁴ COM (1999) 719.

areas. Developments expected in neurosciences, virtual technology, or even robotics and artificial intelligence, for example, can only raise question marks.

A large number of the values and principles mentioned are gaining support and recognition at world level, and most of them are shared by all Europeans. As has been seen on many occasions, Europeans nevertheless differ in how they think they should be applied.

The discussion and the controversies surrounding research into embryos and therapeutic cloning highlight two fundamental issues: the scope for and need to reach agreement on a certain number of rules and principles in this area in Europe, while taking account of cultural and ideological differences; and the role that the public authorities have to play in defining these rules and principles.

In recent years major steps have been taken to create the conditions for achieving a consensus on a certain number of points: the Council of Europe's legislative activities (and those of the Union within its jurisdiction); the thoughts and opinions of the European Group on the Ethics of Sciences and New Technologies set up within the Commission; linking of the national ethics committees under the aegis of the Commission or the Council of Europe.

Other initiatives to be considered in this area might include forging more structural links between existing ethics committees at national and European level; better co-ordination of research, of necessity multi-disciplinary, into the ethics of science conducted in Europe, and greater consistency in the criteria for assessing the ethics of research projects; stepping-up teaching in this area in Europe; developing a "watchdog" function for problems, practices and legislation regarding science and technology ethics; and merging the legislative activities of the Council of Europe and the Union.

3.5 Science and freedom

One way in which Europeans express their view of life, society and the individual is the principle of freedom to research. A certain tension can emerge between this and other ethical values.

However, this is an essential aspect of our concept of the world. The European Union's Charter of Fundamental Rights, as ratified by the Biarritz European Council for formal adoption at the Nice Council, restates this in a simple, powerful formula: "*There is freedom in the arts and scientific research*".

While keeping to the ethical and moral principles set out above, the principle of freedom to conduct research must be resolutely defended and promoted.

The question of relationships between science and freedom is, in reality, two-pronged: freedom to conduct research; freedom of access to knowledge.

In our democratic countries researchers are formally free. However, it does not follow that they are always free in material terms. The constraints on research from the growing impact of economic factors and industrial and commercial interests often leave them little option in determining their research targets and the way of carrying out their work.

Still more fundamental is the matter of freedom of access to knowledge. This was particularly acute in the case of decryption of the genomes of living organisms, especially access to the results of work on human-genome sequencing.

Two related but separate questions arise in this context: secrecy and patentability. These are especially complex because of their economic implications. The principle of freedom of access to knowledge has been reaffirmed at the highest political level in the form of a “Clinton/Blair” declaration. However, this has to be upheld in practice.

The rule that the fruit of inventiveness may be protected but that the product of discovery has to remain in the public domain is clear in principle. It is important for Europe, through the mouthpiece of the EU, to express its firm attachment to this principle and to do everything to ensure that it is applied to the full.

How it is applied, however, especially in the area of life sciences and technologies, has to be clearly specified and then adapted in line with the progress in knowledge and technology, using the mechanisms provided for amending statutory instruments in particular.

While ensuring that the provisions regarding patentability are applied on the basis of the best scientific expertise and the most up to date knowledge, every effort will be made to improve researchers’ knowledge of legal matters.

4 STEPPING UP THE SCIENCE/SOCIETY DIALOGUE

4.1 New forms of dialogue

Dealing with technological risk and “science/society” more generally calls for the development of new forms of dialogue between researchers, experts, political decision-makers, industrialists and members of the public, especially at European level.

Formulas along these lines have been tested and used at national level. “Citizens' juries” or “citizens' conferences” are arrangements that first saw the light of day in Northern Europe, in Scandinavia, the United Kingdom and the Netherlands. These have spawned applications in numerous EU countries.

Their use has illustrated the extent to which ordinary members of the public, once they have all the information in their possession, can conduct high-quality dialogue with experts, put judicious questions to these experts, deliver balanced judgments and reach a reasonable consensus.

Far from being intended to replace the democratic debate in its traditional, recognised forms, still less the political decision-making process, initiatives of this type are designed to help this debate to unfold and to aid decision-making.

Approaches of this type could be applied, at least experimentally, at European level, drawing inspiration from the various forms of social dialogue that exist, to issues of European interest, such as questions of food safety, the use of GMOs, energy options or certain information technology use.

Direct commitment on the part of the scientific community is also necessary. It is with this in mind, for example, that the Biosciences High-Level Group set up under the Research Commissioner operates. One of its central tasks is to improve communication with the public (another being scientific support for ethical considerations, particularly within the European Group on Ethics) .

4.2 Improving the public's knowledge of science

The dialogue between society and science needs to be a two-way street where each listens as much as he talks.

The dialogue between the public and researchers and experts will be all the more rewarding, however, and the capacity of the public to discuss "science/society" issues in full knowledge of the stakes heightened, when it has a thorough knowledge and understanding of science and technology, of scientific "facts" , of the results of research, of scientific action and of the way in which research operates in practical terms.

The aim cannot and must not be to nurture an unfailingly favourable attitude on the part of the public. It must be to create the conditions for an informed democratic debate.

Major efforts have been made in all the Member States in this area and many possible forms of information and familiarisation are available: television programmes providing information on science; specialist magazines and collections of works; permanent or temporary

exhibitions in scientific museums and events organised around these; "Science week" festivals; science and mathematics competitions.

In turn, the EU has for several years been holding European Science and Technology Weeks and a European Union Contest for Young Scientists, awarding scientific prizes for young researchers and experienced researchers alike.

For them to have more impact, these activities should become broad in scope and be more co-ordinated. Efforts should be made to establish more structured links between existing initiatives and organisations at national level, and to strengthen existing structures at European level.

More specifically, a strong European dimension has to be incorporated into the "Science weeks" held at national levels.

In view of its high visibility and symbolic nature, holding an event of a certain magnitude where the results of European research are on display could have a major mobilising effect.

4.3 A scientific information system for Europe

A major aspect of the problem of scientific communication in Europe centres around the means of providing information in this area.

In an area characterised by major financial stakes, with a complex geography turned upside down by recent restructuring moves and the rapid development of the methods used to produce and provide electronic information, the prerequisite for success is action on an adequate scale.

So far Europeans do not occupy the position that they should in this world of scientific information and communication. This applies not only to communication within the scientific community, but also to information intended for the public at large.

Certain recent initiatives, e.g. electronic information intended for scientific journalists, should raise the visibility of science in Europe and improve the knowledge that Europeans have of research activities conducted in Union laboratories and companies. Such efforts would gain from being encouraged and backed by the EU and its Member States.

In view of the particular role played by the audiovisual media in informing Europeans, and of their perception of science, efforts should also be made to extend certain existing initiatives in order to prompt the movement, dissemination and use of products in this area in Europe.

4.4 Boosting the attractiveness of science and careers in science

The development of harmonious, productive relations between science and society also presupposes that interest in science and research will have to be increased in sections of the population where this interest is less than it was once or is only evident to a limited degree.

The first category targeted is the young who are destined to become tomorrow's researchers, engineers and technicians. Other age groups are also involved, however, especially those Europeans whose experience can be turned to account and converted into value in social terms once their professional activities have come to an end.

Action should be taken in order to familiarise young people with the scope for professional and personal enrichment that they may discover in the world of research, e.g. by shedding a favourable light on the lives and careers of European scientists and by showing what other population groups can achieve in this area.

It is also necessary to step up science teaching in schools in Europe in order to reverse the dwindling attraction among the young of scientific professions and the world of research. It is after all the quality and soundness of teaching at school that will determine what benefit is drawn from knowledge acquired elsewhere or in adult life.

4.5 Women in science and research

It is in this context that the place and role played by women in science emerges. This is a society issue in the broader sense. The under-representation of women in the world of research and especially the higher levels of responsibility is a crucial aspect, but it cannot simply boil down to that.

The low presence of women in research is the effect of a system of exclusion linked both to the way research and the scientific community operate and to more general aspects of society.

Beyond increasing the presence of women in the world of science, the development of new relationships between science and society means taking greater account of the specific needs of women in the research agenda and improving the understanding of relations between men and women in society.

The agenda for the European Union's Women and Science activity is evidence of this wealth of options.

The Women and Science activity, which was launched in 1998, has helped to step up efforts in this area at national level and to improve their consistency. These activities must be continued and extended. Joint efforts are needed to encourage women to get involved in scientific work and to develop the tools for analysing their position in research.

The forces that keep women away from research must be studied and a joint effort made to identify the research areas that are of particular interest to women and to improve the organisation of specific research in this area ("Gender studies").

5 SCIENCE AND THE PUBLIC IN THE EUROPEAN RESEARCH AREA

The views and analyses set out in this document and the suggested forms of action to be taken form part of the projected development of a *European research area* in which aspects relating to "science, society and the citizen" constitute a major component.

As in other parts of the *European research area*, the aim is to develop a coherent overview, with common approaches and co-ordinated activities on a European scale.

Here, too, any practical progress will depend on a combined effort and close cooperation between the Member States and between the Member States and the EU, especially the Commission.

This document sets out to pinpoint the issues raised under the umbrella of "Science, society and the citizen" and to give the food for thought that they warrant.

The conclusions of this debate will help to define the action to be taken in this area by the Member States, the EU and, more generally, everyone involved.

The lion's share of the proposed activities should be embarked upon at national level by the public authorities and by all of the operators and parties involved in research.

The EU also has a specific role to play in this as in all other aspects of the *European research area*, where action on its part can provide real European added value.

All in all, the debate sparked by this document, and the activities that will follow, should mean that full account is taken of science/society issues as the *European research area* project is implemented.