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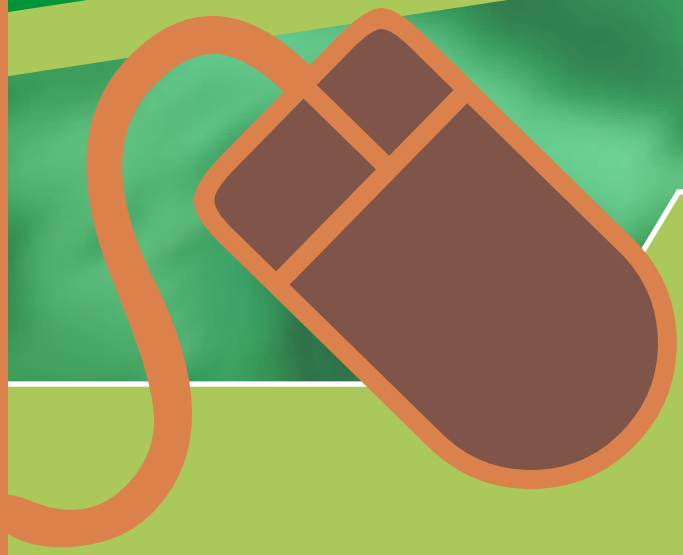
INTEGRATING SCIENCE IN SOCIETY ISSUES IN SCIENTIFIC RESEARCH

Main findings of the study on the integration of Science and Society issues in the Sixth Framework Programme



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EUROPEAN COMMISSION

INTEGRATING SCIENCE IN SOCIETY
ISSUES IN SCIENTIFIC RESEARCH

Main findings of the study on the integration of Science and Society issues in the Sixth Framework Programme

Report to the European Commission

Directorate-General for Research
Science and Society

2007

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INTEGRATING SCIENCE IN SOCIETY ISSUES IN SCIENTIFIC RESEARCH

Main findings of the study on the integration of Science and Society issues in the Sixth RTD Framework Programme

Foreword

Science underpins almost every aspect of our lives. Without it, many of the positive things we take for granted would be unimaginable. Yet, for a long time progress in science and technology has been considered a goal on its own. Science has sometimes developed in an ivory tower separated from society and societal needs, not fully understood by ordinary citizens. More must be done not only to raise public awareness of scientific issues, but also to find ways of actively engaging with civil society, stakeholder groups and the public at large in the preparation and execution of research. The requirement to focus on the societal dimension of research has been clearly spelled out in the 6th Framework Programme (FP6) decision which stated that *'The principle of sustainable development, socio-economic, ethical and wider cultural aspects of the envisaged activities, and gender equality, will be duly taken into account, where relevant for the activity concerned.'*

The aforementioned dimensions were incorporated into the FP6 rules of participation as well as into the Reporting Guidelines for project participants. The Commission has made attempts to coordinate and measure the integration of these issues in the thematic research priorities of the Framework Programme through, amongst other things, the implementation of the Socio-economic and Science and Society Questionnaires.

To take stock of the developments and gather useful lessons for the implementation of the 7th RTD Framework Programme, the Directorate General for Research has commissioned a study on the integration of science and society issues in FP6. The results of the study reveal a mixed picture. On the one hand, a lot still has to be done to raise awareness among FP6 project participants as well as Commission staff on the importance of the societal dimension of research. On the other, the study shows a great wealth of good practices that could be used as inspiration for the future.

I am convinced that through this study we have gained a much better perception of the strengths and weaknesses of our efforts to support societal dimension of research. We are going to take these lessons very seriously while working with projects under the 7th Framework Programme.

Zoran Stančič
Deputy Director General: Scientific Advances

Note

This booklet presents the main findings of the study on "Integration of Science and Society issues in FP6", which involved a specific analysis of education, stakeholder dialogue and public outreach aspects of FP6, and drew on the findings of the following studies: Integration of the Socio-Economic and Foresight Dimensions in FP6, Mid-term Synthesis Report, 2004; Gender Monitoring Studies Interim Synthesis Report, draft of November 2006; and Working Papers 2 and 3 of Gender Monitoring Studies for Lots 2, 3 and 5.

The study has been coordinated by Dr Mary Braithwaite, Tacitus sprl, in collaboration with Renate Fries, PID (Arbeiten für Wissenschaft und Öffentlichkeit) GbR, and Thomas Zadrozny, Pro-Active. Other members of the study team included Nathalie Wuiame, Miriam Anaasagasti Corta and Nigel Ings.

For a full version of the study's final report please visit:
http://ec.europa.eu/research/science-society/

Acronyms

AERO	Aeronautics and space
CA	Coordination Action
CITIZENS	Citizens and governance in a knowledge-based society
DG RTD	Directorate General for Research
EC	European Commission
EU	European Union
FOOD	Food quality and safety
FP6	6th Framework Programme
FP7	7th Framework Programme
GMES	Global Monitoring for the Environment and Security
INCO	International Cooperation
IP	Integrated Project
IST	Information Society Technologies
LIFE	Life sciences, genomics and biotechnology for health
MEP	Member of the European Parliament
NEST	New and emerging science and technology
NGO	Non-governmental organisation
NMP	Nanotechnologies, materials and production
NoE	Network of Excellence
RTD	Research, technological development and demonstration
SED	Socio-economic dimensions
SSA	Specific Support Action
STREP	Specific Targeted Research Project
SUST	Sustainable development

INTEGRATING SCIENCE IN SOCIETY ISSUES IN SCIENTIFIC RESEARCH

"Science in Society" in European scientific research: from FP6 to FP7

Good scientific research cannot be pursued in a social vacuum, and must contribute to Europe's social objectives. In 2000, the European Commission initiated a debate on the relationship between science, society and Europe's citizens, which led to a Science and Society Action Plan[1]. The aim of the Action Plan is to ensure that European research fully contributes to the Lisbon Strategy, and *inter alia* to the 2001 White Paper on European Governance. The plan has three objectives:

1. to promote a scientific and education culture in Europe, notably through public awareness, science education and careers and dialogue with citizens;
2. to bring science policies closer to citizens, by involving stakeholders, including civil society, achieving gender equality in science and anticipating tomorrow's needs.
3. to put responsible science at the heart of policy making, through promoting the ethical dimension in science and in new technologies, detecting and assessing risks and tapping expertise.

The Commission's role in implementing the Action Plan is to act as a catalyst and facilitator, using various Community instruments and involving the Member States in a joint, coordinated approach.

Science and society in FP6

In FP6, covering the four-year period 2002-2006, €88 million were allocated to science and society activities. A dual approach was pursued. On the one hand, FP6-funded research projects - such as Integrated Projects, Networks of Excellence and accompanying actions - were required to integrate science and society issues, as relevant, in their research (the so-called, "embedding" or "horizontal" approach). On the other hand, specific actions on particular science and society themes were organised within given thematic research areas; these have typically been Specific Support Actions, Coordinated Actions, or Specific Targeted Research Projects, or meetings and other initiatives initiated by scientific officers in the various thematic directorates.

Four science and society issues have been the focus of attention in FP6:

- Public outreach/dialogue to create the conditions for an informed democratic debate on science. This requires the provision of excellent information and communication to the public on science and technology, as well as open, two-way dialogue between researchers, experts and the public on science and society issues. The aim is to improve the public's knowledge of science and enable Europe's citizens to engage in informed – and open – debate on scientific progress, and on its benefits and limitations. Actions include television programmes and debates, museum exhibitions, science weeks and prizes, science centres and "shops", providing targeted information for journalists, etc.
- Education. Scientific and technical knowledge is essential for the knowledge-based society, and should be part of the basic skills of all citizens. A strong pool of scientists is

[1] Science and Society Action Plan COM (2001) 714 Final.

needed to contribute to economic growth and social development. Increasing the attractiveness of science, mathematics and technology, and of careers in these areas, especially amongst the young, is a priority. Key actions focus on: promoting science and technology in all levels of education; improving the ways in which science and technology are taught; and retaining the enthusiasm and opportunities for personal development of trained scientists in the private and public sectors.

- Gender in scientific research covers two dimensions: increasing female participation in science and research, and addressing gender issues associated with the subject of research. Networks of Excellence and Integrated Projects should prepare an action plan for promoting gender equality in their project, and all projects should conform to national and international regulations on equal opportunities. The minimum target of 40% female participation in expert groups and evaluation panels has been strongly pursued as one element of the strategy.
- Ethical issues must be taken into account, as relevant, by all applicants to FP6. The most visible ethical issues are raised in the context of genetics and biotechnology, where respect for life is of major public concern. However, ethical issues emerge also in other areas of science and research, including respect for privacy in the use of information technology and obligations to future generations concerning the environment and climate change. In the social sciences, ethical issues are raised when sensitive issues such as fertility, ethnicity and religion are the subject of research, and the conduct of socio-economic research on human subjects should also respect ethical standards.

Science in society in FP7

FP7 has introduced an important conceptual change (from science and society to science in society), and a significantly increased budget. The aim is to embed scientific research in society, and to further break down the barriers between science and society, and between scientists and citizens. The rationale is that the ability of European societies to develop themselves in a positive and sustainable way depends - to a large extent - on their capacity to create and exploit knowledge and to innovate. €330 million are earmarked for Science in Society activities over the seven year period of FP7.

The 'Science in Society' programme aims to stimulate a harmonious integration of scientific and technological endeavour and associated research policies in European society. It encourages Europe-wide reflection and debate on science and technology and their relation with society and culture. 'Science in society' is implemented through the following mix of initiatives:

- Policy-related actions and research;
- Cooperation between EU Member States, identifying common goals, and reinforcing national practices, using the open method of coordination;
- Promoting, supporting and monitoring the uptake and impact of 'Science in society' issues in other parts of the Seventh Framework Programme (FP7). The theme will also ensure overall coordination of issues related to 'Science in Society' both across FP7 and within other relevant European Community activities (e.g. relating to education and culture).

The 'Science in Society' theme provides support in four areas:

- A more dynamic governance of the relationship between science and society, including research on ethics in science and technology and exploration of the reciprocal influence of science and culture and the conditions for an informed debate on ethics and science.
- Strengthening potential, broadening horizons, including: strengthening the role of women in scientific research; supporting formal and informal science education in schools as well as through science centres and museums and other relevant means; and reinforcing links between science education and science careers.
- Science and society communication, including encouraging a European dimension at science events targeting the public, and science prizes.
- Trans-national cooperation among National Contact Points (NCPs) for 'Science in Society'.

Studying Science and Society issues in FP6

To inform the implementation of FP6 and the preparations for FP7, the Commission services ordered several studies of the embedding of Science and Society (S&S) issues in FP6:

- Six gender monitoring studies have been conducted between 2005 and 2007, covering the participation of women in FP6 activities and the gender dimension in research content[2].
- The embedding of education and public outreach/dialogue issues in FP6 projects has been the subject of a study during 2006-2007.
- Finally, a study of the treatment of ethics in FP6 is underway[3].

Not all FP6 Science and Society actions are addressed by these studies, which focus predominantly on the ways in which science and society issues are addressed through the "embedding" or "horizontal" approach (within scientific research programmes and projects), rather than as separate activities. A number of specific actions implemented within FP6 have thus fallen outside these inquires.

The following sections present the main findings concerning the embedding of Science and Society issues in FP6 projects, then recommendations for the integration of Science in Society issues in FP7. A separate part outlines examples of good practices from various Science in Society areas and gives useful sources of information.

The overall aim is to raise awareness of the relevance of key Science in Society issues for research, and to demonstrate in practical ways how these issues can be addressed within research programmes and projects.

Embedding of Science and Society issues in FP6

At project level, the extent to which science and society issues have been integrated into FP6 varies between the issues, and between priority themes. Overall, however, the studies show that FP6 projects addressing science and society issues properly are in minority.

[2] Final reports will be published during 2007-2008.

[3] This report was produced before any results of the study on Ethics in FP6 were available, so ethical issues are not covered as a specific theme.

Due to data limitations, only a rough idea can be gained concerning the relative extent of integration of science and society issues in FP6 projects. The proportion of FP6 projects addressing science and society issues, as indicated by available data, is:

- ethics 12%
- gender balance and promotion of female participation in science 34%
- gender in research content 3.4% to 37% depending on the priority theme
- education outreach to young people and schools 6%
- two-way dialogue with stakeholders 38%
- outreach to stakeholders and the general public 42%.

Of the science and society issues studied, education actions to reach young people appear to be the least well addressed by FP6 projects, while communication actions reaching stakeholders and the public are the most widely addressed.

There are significant variations between priority themes, with rather low attention to science and society issues in some FP6 Priorities (notably 3 and 4) and much higher attention to some issues in others (for example in Priority 6, 7 and INCO projects) [4].

To a large extent, FP6 projects respond to the guidance on science and society issues given at programme level. While the formal guidance given in programme documentation is important (Work Programmes, Guidance to Proposers, evaluation criteria and procedures, and reporting requirements), the more informal guidance given during project evaluation, negotiation and implementation is clearly also significant.

The significance of informal "protocol" may explain why the majority of projects do not address relevant science and society issues, even where the guidelines are relatively clear. Formally, for example, all projects were required to complete the Science and Society questionnaire and submit Work Force Statistics (neither of which are time-consuming tasks), but only a minority have done so. Even for issues that have been given a relatively strong emphasis in FP6, such as gender equality, the guidance and requirements are overlooked by many, during evaluation, negotiation, implementation and reporting. Some programme and project staff understand the relevance of science and society issues to good European research practice and scientific excellence, and ensure that these issues are addressed - but this is rare. In general, awareness of science and society issues is not yet sufficiently embedded in the values and principles underpinning European research practice.

A further important observation concerns the relevance of different Science and Society issues. Some issues are relevant to all themes and instruments, while others vary in their relevance

Promoting science education for the young and increasing female participation in science (gender equality) must be considered to be relevant to all themes and instruments, in view of their importance in EU policy, including the Lisbon strategy. Stakeholder involvement and dialogue should also be treated as relevant to all scientific research, for without the engagement of future users and stakeholders, high research relevance and impact are difficult to achieve. A clear lesson

[4] FP6 thematic priorities: Priority 1 - Life sciences, genomics and biotechnology for health, Priority 2 - Information society technologies, Priority 3 - Nanotechnologies and nano-sciences, knowledge-based multifunctional materials and new production processes and devices, Priority 5 - Aeronautics and space, Priority 6 - Food quality and safety, Priority 7 - Sustainable development, global change and ecosystems, Priority 8 -Citizens and governance in a knowledge-based society.

of the gender studies is the need for a strong stakeholder and end-user approach to research, addressing socio-economic and gender diversity within the various groups of stakeholders and end-users and involving women and men from these groups in the research.

Other science and society issues vary in their relevance and significance. This is the case with gender in research content: in some cases it is not relevant, or only partly relevant, to the research; in other cases it is an important analytical and explanatory variable that must be addressed as part of scientific excellence. Ethical aspects also vary between research themes, and according to how narrowly or broadly scientific ethics are defined.

The general framing of the research agenda in different scientific domains appears also to be an important factor in the embedding of science and society issues. Human and social dimensions - such as education, broad stakeholder participation and public outreach – are more easily accommodated when the research agenda addresses societal and environmental objectives.

Key factors in integrating science and society actions in research projects are: a clear understanding within the project partnership of concepts, issues and methods for addressing the issues; appointment of a person or team to deliver actions in these areas; and clear incorporation of these aspects in work packages and resources. Factors in the sustainability of science and society appear to be the existence of a solid, broad partnership involving stakeholders (formal or informal) and the creation of a high level of ownership and motivation by participants, due to the personal value of the actions to the participants. Embedding actions in the ongoing activities of partners and stakeholders is also important.

Recommendations on integrating Science in Society issues in FP7

A number of practical recommendations emerge from the studies of science and society issues in FP6 for Science in Society issues as a whole. These include three general recommendations relevant to FP7 as a whole, and a series of specific recommendations for addressing Science in Society issues at strategic moments in the programme and project cycle.

To underpin the integration of Science in Society issues in FP7 as a whole, the following are essential:

1. **Clear and precise definitions** of the various Science in Society issues, understandable to scientists and scientific policy-makers.
2. **Convincing arguments and demonstrations of the relevance** of Science in Society issues to FP7 programmes and projects, highlighting links to the Lisbon strategy, scientific excellence and impact.
3. **Practical examples of how Science in Society issues can be addressed** in mainstream scientific research, along with useful links to further information and tools.

Clear **definitions** of the various Science in Society issues, understandable to scientists and scientific policy-makers, are needed. Many scientists are not trained in social sciences, human resources or communication, and are not familiar with EU social policy. Concepts such as governance, gender equality, stakeholder engagement, and public dialogue need to be clearly explained, and precise objectives and illustrative examples of their use provided.

Convincing **arguments and demonstrations of the relevance** of Science in Society issues to FP7 programmes and projects must be provided. The arguments are three-fold:

- One key argument concerns FP7's required contribution to the Lisbon strategy of growth, competitiveness and employment, which requires significantly increased opportunities for women and young people to participate in the knowledge-based society and economy. In this respect, the Science in Society objectives of strengthening research capacity through increasing the role of women in scientific research, promoting scientific careers and supporting science education for young people are of utmost importance.
- A second key argument concerns the link between certain Science in Society issues and scientific excellence. Where gender, or other societal and cultural, issues are important variables in research, scientific excellence requires that they be addressed; to not do so leads to potentially biased or incomplete research results.
- A third argument concerns the link with scientific impact. High research impact can be achieved only by involving, and communicating with, the full diversity of stakeholders. Dialogue with a wide range of potential users of research results helps to identify relevant issues and questions, shape the research design to meet their needs, and disseminate the results.

In addition to the three general recommendations, a series of specific recommendations for addressing Science in Society issues at strategic steps in the programme and project cycle are suggested.

At programme level, the following recommendations are suggested:

- In **Work Programmes**, there should be an explanation of the policy context and objectives concerning Science in Society issues and, in the specific sections on research topics and actions, the most important Science in Society issues should be addressed (e.g. an indication of the key stakeholders to be involved and the major socio-economic and gender issues to be addressed).
- **Guidance to proposers** should include a section explaining the various Science in Society issues, indicating – for each issue - its policy importance, the specific objectives to be achieved during FP7, the measures that can be taken, and useful sources of further information (relevant data, analyses, methodological guidelines, good practices, etc.
- Simple indicators for **evaluating** Science in Society aspects in proposals need to be elaborated, and included in evaluation criteria and procedures. There need to be briefings for evaluators on how to evaluate Science in Society aspects, and experts with relevant knowledge should be included in evaluation teams. Monitoring the evaluation of Science in Society issues, and their inclusion in evaluation reports, is also important.
- An effective **monitoring system** – to collect and assessing data and information on the integration of Science in Society aspects - is needed, to allow early response by FP7 management and to disseminate examples of good practices for wider.
- A major effort should be made to build knowledge and capacity on Science in Society issues in **National Contact Points** for FP7, including the provision of information, awareness-raising and training. NCPs should include staff with relevant knowledge, and establish links with national and EU sources of information and guidance on SiS issues.
- Similarly, **Technology Platforms and Expert Groups** should include experts on Science in Society issues (education, gender equality, science communication, etc), and relevant Science in Society issues should be included in their objectives and work.

At project level, the following recommendations are made:

- **Project proposals** need to clearly indicate which Science in Society issues are relevant to the research topic/action, the objectives of the project in addressing these issues, and how they will be achieved. It is important to include the Science and Society actions in work packages, and in resource and budget allocations. Research partnerships and teams should include skills and experience in socio-economic and gender analysis, stakeholder dialogue, communication, science education, etc.
- **Project officers** need briefings about Science in Society aspects - in writing (simple explanations and checklists) and orally – as well as "rapid-response" support during **negotiations**, e.g. on the improvements that projects can be requested to make.
- **Project reporting** could be strengthened considerably, with activity reports including reporting on the actions taken to address Science in Society issues, and final reports to include the results of Science in Society actions, particularly the people involved and reached (gender breakdown, stakeholders, schools/educators, etc.)

Some useful sources of information

Documents:

- Working together for growth and jobs. A new start for the Lisbon Strategy. COM (2005) 24
- White Paper on European Governance COM (2001) 428 Final
- Science and Society Action Plan COM (2001) 714 Final
- Research that counts on citizens. Letting society into Europe´s research programmes. Project compendium – ISBN 92-894-9376-3. European Commission. May 2006
- EU Research connected to society: Sample portfolio of research engaging with citizens. http://ec.europa.eu/research/science-society/page_en.cfm?id=3510
- Mid-Term Assessment of Science and Society activities 2002-2006. Final Report March 2007. http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=1080

Web sites:

- http://ec.europa.eu/research/index.cfm
- http://ec.europa.eu/research/science-society/
- http://ec.europa.eu/dgs/education_culture/index_en.html
- http://ec.europa.eu/information_society/research/index_en.htm
- http://ec.europa.eu/governance/index_en.htm
- Useful links to EU and international resources on Science in Society issues can be found at: http://ec.europa.eu/research/conferences/2005/forum2005/library_en.htm

SCIENCE AND SOCIETY IN FP6 PROJECTS: BEST PRACTICES

1 SCIENCE EDUCATION FOR YOUNG PEOPLE

Educator-scientist partnerships
make the project and materials relevant to the needs of schools

The HERMES Integrated Project (Sustainable Development), involving 36 scientific and 9 business partners, has organised a series of educational activities linked to its research on marine ecosystems. The HERMES@School scheme aims to increase awareness about the deep-sea environment and improve the teaching of natural sciences in 5-13th grade classrooms. To do this it links professional HERMES researchers with local educators in researcher/educator and also researcher/children partnerships. Further, Hermes@School, Classroom@Sea, Class@Oceans and Class@Desert provide "hands-on" marine science by hosting teachers and pupils onboard various EU research ships who work alongside scientific teams and report their experiences – in an easily understandable manner - to their respective websites. The sites are updated daily during the cruise and pupils on land can contact and question the research crew "live". E-learning, thematic maps and 3D visualisation of ecosystems are offered as supportive elements via an educational website (www.edu-hermes.org). The teaching aids available for a wide audience reaching from schoolchildren up to undergraduate level have been produced in close cooperation of scientists and teachers.

Giving the young a taste for science

SR2 YPC (a Mobility 13 SSA) aimed to develop a "taste" for science amongst children aged 6 to 14 years old. Workshops were run in schools and an educational game - called "Science au féminin" - enabled children to discover female scientists in various domains. Organised by a University and supported by many local authorities, the project also involved schools, laboratories, a scientific and technical cultural centre and theatres. www.physifolies.fr/2005.html Save the Robots (a Mobility 13 project) brought children into direct contact with researchers in robotics through interactive events and playful experiences of science and technology at a Cultural Centre for Children in Dublin. The centre was open to families, six days a week, and incorporated free guided-tours and robot-building workshops. Other events included workshops to explore innovative approaches to robotics and learning, an International Robot Talent Show and a robot DJ performance. Participants in the project included kinetic sculptors, engineers and software developers. www.robots.ie

The European Windtunnel Association's NoE organised an international "School-Lab course" for teenagers aged 16-18 years old, to increase their interest in aerospace and related science. Young women were particularly targeted. www.schoollab.dlr.de

Producing useful education materials

Several FP6 projects should produce useful educational materials for pupils and young people, especially audiovisual materials. Good examples of mainstream research projects producing educational materials for the young are: HERMES, a Sustainable development IP, (www.edu-hermes.org); EUR-OCEAN, a Sustainable development NoE (www.eur-oceans.info), EUROSTEMCELL, a LIFE IP, (http://www.eurostemcell.org/index.htm).

Two other good examples are the Mobility 13 projects SR2 YPC (www.physifolies.fr/2005.html) and NEXT GENERATION (www.archimedes.ee).

For further examples of best practices please see the full version of the study's final report at http://ec.europa.eu/research/science-society/

Some useful information and tools

Documents:

- Science Education NOW: A Renewed Pedagogy for the Future of Europe, High Level Group on Science Education, DG Research, 2007. http://ec.europa.eu/research/science-society/document_library/pdf_06/report-rocard-on-science-education_en.pdf
- Science teaching in schools in Europe. Policies and research. (2006) Eurydice. ISBN 92-79-01923-6. The study provides a comparison of the regulations and official recommendations concerning initial teacher education in 30 European countries: programme content and accreditation criteria, and the qualifications and experience of trainers in training establishments and in schools.

  www.eurydice.org/portal/page/portal/Eurydice/showPresentation?pubid=081EN
- Promoting Science in Schools. (2004) European Commission, Joint Research Center. Selected examples of JRC Projects that can be used in education (> Publications > Brochures).www.jrc.ec.europa.eu/default.asp@sidsz=more_information&sidstsz=other_useful_links.htm
- RTD Info – Science Dialogue, Special Edition, November 2005. http://ec.europa.eu/research/rtdinfo/index_en.html

Web sites:

- XPLORA - the European gateway to science education. It is aimed at teachers, pupils, scientists, science communicators and science educators. Includes open source tools for science education. http://www.xplora.org/
- EIROFORUM is a collaboration between seven European inter-governmental scientific research organisations. Among their activities, they carry out education projects with the science teaching community in Europe's primary and secondary schools. These projects include the EIROforum Science on Stage festival, which brings together hundreds of teachers from across the continent, and the European journal Science in School, which promotes inspiring science teaching. Other projects specifically target young people, such as Life in the Universe, Scitech - Couldn't be without it! and Catch a star. Some of the projects are supported by the EU. www.eiroforum.org/activities/outreach.html
- SCIENCE IN SOCIETY PORTAL – the Science and Society portal of the European Commission, launched under FP6, contains a lot of information and links, e.g. under "Science Education", to a set of relevant projects. http://ec.europa.eu/research/science-society/home_en.cfm
- EURYDICE – The information network on Education in Europe. Eurydice is an institutional network for gathering, monitoring, processing and circulating comparable information on education systems and policies throughout Europe**.** It covers the education systems of the EU Member States, the three EFTA countries that are members of the European Economic Area, and the EU candidate countries. http://www.eurydice.org/portal/page/portal/Eurydice
- EUROPEAN SCHOOLNET - European Schoolnet (EUN) is a not-for-profit consortium of 28 ministries of education in Europe created in 1997. EUN provides major European education portals for teaching, learning and collaboration. www.europeanschoolnet.org

2 USER AND STAKEHOLDER DIALOGUE

Users shape research outputs

GEOLAND, an Aerospace IP, is a 20M € project with 56 public and private sector partners. It forms a key part of the Global Monitoring of Environment and Security (GMES) programme, bringing together and coordinating national and regional data sources concerning land cover, environmental stress, and vegetation. GEOLAND is organised around a framework of "observatories", Global and Regional, each of which has established a core users group which plays a significant role in shaping project outputs and ensuring full access to them. A "users day" has been organised at each annual forum, which is designed to welcome new and current users of project outputs and introduce them to the resources assembled by GEOLAND. Annual fora are the culmination of a host of other activities which are designed to engage European business communities, research institutions, & national governmental agencies with GEOLAND's processes and outputs so as to promote uptake of resources and encourage alignment with evolving land use and environmental policies. A particular focus has been on new EU members with special events (workshops, conferences) targeting those countries. www.gmes-geoland.info

Networks widen the involvement of stakeholders and citizens

POLITIS (a Citizens and Governance STREP) explores the potential of immigrants in the development of a civically-active European society. In addition to a small core consortium, involving a European NGO, the project involves a large number of other actors in a series of networks: one network brings together 35 experts from 25 EU states, while another involves more than 70 international students and PhD researchers from multicultural backgrounds, a group of students associated with the lead partner and more than 176 active immigrants from the 25 countries involved. The network members are involved in shaping the research, disseminating project findings and raising public awareness about the issues addressed. www.uni-oldenburg.de/politis-europe

Mechanisms to link scientists and policy-makers

HERMES, a Sustainable development IP, seeks to develop a science-policy interface, and ensure that policy makers and stakeholders have access to relevant and timely scientific knowledge in support of policy developments. Three mechanisms link science and policy: a Science Implementation Panel; a Science-Policy Panel; and national/regional stakeholder partnerships. The Science Implementation Panel (SIP) comprises seven members, allowing for in-depth discussions with scientists. SIP members inform the partnership about key political and societal issues and provide input concerning policy needs and other important information. The SIP is a subset of the Science-Policy Panel (SPP), which, as well as the SIP members, involves EU policy makers, stakeholders from industry, NGOs, representatives of international organisations and leading scientists. The objective of this panel is to ensure that the research and the strategies emerging from it are brought promptly to relevant European and international policy makers, so that timely policy evolution can take place. The third mechanism is national and regional stakeholder-scientist partnerships as well as specific media entry points. These are the responsibility of partners in the participating states. www.edu-hermes.org

Some sources of useful information and tools

Stakeholder dialogue tools:

- Stakeholder dialogue can take a number of forms, depending on its purpose and the depth of engagement that is desired or needed. Clarifying the purpose and level of engagement is essential for designing the appropriate strategy for stakeholder dialogue and involvement. Collaboration, for example, requires a deeper engagement with stakeholders, but may be needed if the take-up of research results requires strong buy-in by certain stakeholders. If the views and buy-in of other stakeholders are not needed, it may only be necessary to keep them informed. A four-fold classification of levels of dialogue and engagement is presented below, drawn up on the basis of the Public Participation Spectrum a tool developed by the International Association for Public Participation (http://www.iap2.org/associations/4748/files/Spectrum.pdf).

Levels of stakeholder dialogue and engagement

INFORM	CONSULT	INVOLVE	COLLABORATE
Purpose:	**Purpose:**	**Purpose:**	**Purpose:**
To provide stakeholders with balanced and objective information to assist them in understanding the issues, opportunities and solutions.	To obtain feedback from stakeholders on the findings of analyses, options and/or decisions.	To work directly with stakeholders throughout the process to ensure that their concerns and views are consistently understood and considered.	To collaborate with stakeholders as partners throughout the process, including in the analyses and development of solutions and in making decisions.
Promise to stakeholders:	**Promise to stakeholders:**	**Promise to stakeholders:**	**Promise to stakeholders:**
We will keep you informed (but we will not find out your views or take these into account in any decisions).	We will keep you informed, will listen to your views and will provide feedback when the decisions are made (but we do not guarantee that your views will influence the decision).	We will work with you to ensure that your concerns and views are directly reflected in the analyses and in the solutions developed, and we will provide feedback on how your inputs influenced the final decision.	We will give an important place to your views and experiences during the process, and will seek your suggestions and advice on solutions. We will take your views into account in the final decision, to the maximum extent possible.
Examples of techniques:	**Examples of techniques:**	**Examples of techniques:**	**Examples of techniques:**
∞ Newsletters ∞ Web sites ∞ Information days	∞ Focus groups ∞ Surveys ∞ Stakeholder meetings	∞ Workshops ∞ Deliberative polling	∞ Stakeholder Advisory Committees ∞ Consensus-building ∞ Participatory decision-making

- The level of stakeholder dialogue and engagement will vary from one stakeholder group to another. The FP6 embedding study identifies five main categories of stakeholders: scientists; policy-makers; industry / business; civil society; public at large / media. Some or all categories may be relevant to particular research actions. For each relevant category, the specific stakeholder groups need to be defined (e.g. the specific policy-makers, industry and civil society groups) at the relevant level, international, EU-wide, national, etc. The type of engagement and dialogue – inform, consult, involve, collaborate – should then be established for each specific stakeholder group, depending on their importance to and influence on the results and impact of the research action. The following type of table has been used in EU evaluations[5] to categorise programme and project stakeholders, and this may be useful as a framework for establishing appropriate types of stakeholder dialogue and engagement for FP7 projects.

Categorising stakeholders and establishing level of engagement

STAKEHOLDERS		INFORM	CONSULT	INVOLVE	COLLABORATE
International level	Scientists				
	Policy Makers				
	Industry/Business				
	Civil Society				
	Public at Large/ Media				
EU level	Scientists				
	Policy Makers				
	Industry/Business				
	Civil Society				
	Public at Large/ Media				
National level	Scientists				
	Policy Makers				
	Industry/Business				
	Civil Society				
	Public at Large/ Media				
Regional/local level	Scientists				
	Policy Makers				
	Industry/Business				
	Civil Society				
	Public at Large/ Media				

- Information on a wide variety of tools and techniques for stakeholder engagement are available from the "Citizen Science Toolbox" – a resource for communities, scientists and decision-makers. http://www3.secure.griffith.edu.au/03/toolbox

[5] Evaluation of the EU Programme to promote Member State co-operation to combat social exclusion and poverty. EC 2007. http://ec.europa.eu/employment_social/social_inclusion/docs/evaluation_full_text_en.pdf

Documents:

- Governance of the European Research Area: The role of civil society (2003). Henning Banthien, Michael Jaspers, Andreas Renner. Bensheim, Berlin, Brussels. http://ec.europa.eu/research/science-society/pdf/final_report_study.pdf
- Intercultural Dialogue. Best practices at Community level. European Commission. DG EAC. http://ec.europa.eu/dgs/education_culture/dialogue/catal_dial_en.pdf
- Stakeholder Involvement Techniques: Short Guide and Annotated Bibliography. Nuclear Energy Agency, OECD 2004. (This is relevant to all areas of scientific research.) http://www.nea.fr/html/rwm/reports/2004/nea5418-stakeholder.pdf

Web Sites and e-networks:

- SINAPSE – e-network: main objective of SINAPSE e-network is to make better use of expertise in policy making. The e-network should facilitate the involvement of actors that cannot, at present, easily be consulted or share their knowledge/viewpoint. It can also be used as a tool facilitating exchange of information within the scientific community and other actors concerned by science. http://ec.europa.eu/sinapse/sinapse/index.cfm
- Governance in the EU contains the White Paper on Governance, adopted by the EC in 2001, and various useful documents and links on governance. http://ec.europa.eu/governance/index_en.htm

3 SCIENCE COMMUNICATION WITH THE PUBLIC

Public outreach at the heart of scientific research

EUR-OCEANS, a Sustainable development NoE, has a Public Outreach Team involving 11 aquaria and scientific centres located in the EU. Around 2,5 million visitors are estimated to attend the exhibitions. Other activities involve press conferences, public lectures in the centres and aquaria, the production of films and TV series to be broadcast through national channels and the publication of brochures on research findings. A special web site has been created for the general public, containing interactive games, films, video conference opportunities, as well as documents, educational material and links. The Outreach Team helps to produce scientific material for non-specialised audiences by providing guidance, human resources and funds for the production of films, press releases, press and web conferences, etc. www.eur-oceans.info

Award-winning films communicate stem cell research to the public

EUROSTEMCELL, a Life Sciences IP, combines the expertise of more than 100 researchers across 27 research groups in 14 partner institutions. A range of outreach activities have been organised, including the production of four films looking at different aspects of stem cell research. All are the result of close collaboration between researchers and filmmakers, and are designed to be accessible to a broad general audience aged 14+. Produced in English, the films have subtitles and/or narration in French, German, Dutch, Italian and Swedish. One film, A Stem Cell Story, won the best TV/video production award at the Tromsø Science Media Festival and SCINEMA Science film festival in Sydney, and was selected to screen in competition at the Science Film Festival in Bangkok and at BaKaFORUM 2007. The three other films focus on the ethical issues surrounding stem cell research, stem cell culture and cloning. Scientists were actively involved throughout the production and distribution process, providing many of the films' stunning image sequences, and taking on roles as diverse as script consultant, interviewee, narrator, distribution agent and translator. Instead of outsourcing the whole project to a film production company, scientists and filmmakers worked closely together in an equal partnership. The result is a series of films that present the latest developments in a cinematic and scientifically accurate way – with both parties finding the collaboration professionally and personally stimulating. www.eurostemcell.org

Web-based networking achieves wide outreach

Internet-based communication and networking is a core element of the FEAST project, an INCO SSA, which encourages and assists RTD cooperation between Europe and Australia. The database-driven website has been designed using state-of-the-art standards and tools, and is updated daily. The site consistently registers more than 1,000 individual sessions per day. It contains information about Australian participation in the Framework programmes projects (including FP5 and FP6) and other programmes, relevant science policy news, research funding opportunities, fellowships and job opportunities, a large membership database, areas for national networks such as FEAST-France, a helpdesk with a range of frequently asked questions, RSS feeds, newsletters, email lists, and other facilities. Like all good websites it is a "living being", changing in response to user demand and priorities. www.feast.org

Some sources of useful information and tools

Documents:

- A Guide to Successful Communication. This website and document, issued by DG Research, is designed to assist project coordinators and team leaders to communicate effectively about the objectives and results of their work. The guide covers issues such as: defining key messages; establishing target audiences, selecting methods of communication; adapting information to the intended channels; building good relationships with the media; evaluating results and maximising the exposure of the message.http://ec.europa.eu/research/science-society/science-communication/index_en.htm
- Communicating Science to the Public : A Handbook for Researchers, produced by the Research Council of Canada. http://www.nserc.gc.ca/seng/how1en.htm
- Further useful guides to science communication are listed in the INTUTE site. http://www.intute.ac.uk/healthandlifesciences/cgi-bin/browse_pscicom.pl?id=24

Web Sites:

- AlphaGalileo: The world's leading independent resource for European research news. http://www.alphagalileo.org/
- XPLORA, the European gateway to science education, also includes communication. http://www.xplora.org/ww/en/pub/xplora/
- Athenaweb, A moving picture of Science. http://www.athenaweb.org/
- EU Union of Science Journalists. http://www.eusja.org/

4 WOMEN PARTICIPATION IN SCIENCE AND RESEARCH

Detailed monitoring helps to identify and address problems

SENSOR, an environmental sciences IP, has achieved a gender balance of 60% men and 40% women in the project, including in leading positions. Improvements have been made in the participation of women as scientific teamleaders. Detailed monitoring of participation of women in both the project and partner institutions shows that the project performs better than the partner institutions, suggesting that projects can offer possibilities for women to take up leading positions independently of their institutional settings. Nonetheless, the monitoring shows a basic underlying trend of the higher the position, the more men. The project's Gender Action Plan (GAP) draws particular attention to the situation of partners with family responsibilities and gender issues in research tasks. 20-30% of SENSOR researchers have to make arrangements for family care to be able to attend SENSOR meetings. The project has achieved a reduction in the number of senior researchers not able to attend meetings due to family obligations (from 5 to 2%). The use of a gender survey, going beyond the basic monitoring, has helped to identify and understand the problems underlying gender imbalances. The project has also monitored the gender balance of stakeholders involved in the research, and has examined differences of perceptions of regional sustainability according to gender. www.sensor-ip.org

Learning from different actions to promote female participation

The Gender Action Plan (GAP) of Marine Genomics Europe (MGE), an NoE, involves a web site, creche assistance, one-month fellowships, mentoring and a prize. The creche assistance, in the form of a travel grant, was under-used, and reallocated to other activities. The mentoring was used by some female researchers, but much less by the main target group (junior permanent scientists), due to lack of time. On the other hand, the prizes - 5,000 euro each - were successfully awarded to one senior and one junior female scientist, to reward their outstanding scientific achievements in the field of marine biological research. The fellowships too were used, providing women from the South and North with 1,800 euro/month to go abroad. The lessons of the GAP actions are the need to sensitise scientists and to try to respect gender balance in training and all committees.
www.marine-genomics-europe.org/index2.php?rub=b&pid=49&aid=22

Gender watch system at project level

EURNEX is a rail transport research NoE, which established an internal gender watch system, provided mentoring, facilitated the recruitment of female researchers, and encouraged networking between female scientists. Female participation in the project is low (20% scientific managers, 16% team/WP leaders, 14% researchers), and robust measures are required to increase female participation in transport research. Requests for support by women were highest for the mentor/trainee programmes and for help with finding research job opportunities. The Mentor Trainee Programme includes: participation to EURNEX conferences and sector fairs; a visit to the institute where the mentor works; participation in relevant research programme meetings; and publication of a paper in a scientific journal or at an international conference. Aware of the gendered nature of transport research, new research topics of particular interest to female researchers have been identified (safety and security, intelligent mobility, and environmental issues). www.eurnex.net

Some sources of useful information and tools

Documents:

- SHE Figures 2006 : Women and Science – Statistics and Indicators, April 2006. http://ec.europa.eu/research/science-society/pdf/she_figures_2006_en.pdf
- European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers http://ec.europa.eu/eracareers/index_en.cfm?l1=29&CFID=8251748&CFTOKEN=f7c67bcaf7b025c-52912FF5-F059-8E4D-EBB703CDD35CFC0E
- EUROSTAT report on gender differences among Europe's knowledge workers - http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-NS-06-012/EN/KS-NS-06-012-EN.PDF
- Science policies in the European Union: Promoting excellence through mainstreaming gender equality. A Report from the ETAN Expert Working Group on Women and Science. http://ec.europa.eu/research/science-society/pdf/g_wo_etan_en_200101.pdf
- Waste of Talents: turning private struggles into a public issue. http://ec.europa.eu/research/science-society/women/enwise/enwise_report_en.html

Web Sites:

- FP6 women and science site, with many resources relevant to FP7 http://cordis.europa.eu/science-society/women.htm
- A summary of policy positions and issues concerning women and science, together with a links to EU and national documents, international organisations, NGOs and press articles can be found at www.euractiv.com/en/science/women-science/article-143887
- WiTEC, the European Association for Women in Science, Engineering and Technology (SET). www.witec-eu.net/
- European Platform of Women Scientists. www.epws.org/
- The Gateway, global Internet resources for women in science, with a European focus. www.southern.com/natasha/women/gateway/gateway.htm
- Women-related web sites in science and technology. www.research.umbc.edu/~korenman/wmst/links_sci.html

5 GENDER ISSUES IN SCIENTIFIC RESEARCH

Improving research outputs and impact through a gendered analysis

PILDU, an INCO DEV project, addresses ways to improve the use of contraceptives in China, where gender inequalities are marked. Women, for example, are traditionally supposed to take up responsibility for contraceptives, but this sometimes fails, resulting in abortions. Men are often overlooked as targets for contraceptive use, and often fail to take responsibility for contraception. Reproductive health is a gendered issue. Men and women have different roles in the reproductive process, for biological and cultural/religious reasons, and are often treated differently by health services. PILDU has taken the gender dimension into account by giving special attention to men in every aspect of the project, and by identifying differences and inequalities between men and women with regard to reproductive health. The project also addresses gendered structures of power within the clan/family, influencing relations between women and men and reproductive behaviour. The research outputs will identify gender differences emerging from the data collection and analyses, so as to further understand existing stereotypes and to be better able to develop strategies of change in the design and delivery of reproductive health services

Understanding human diversity is essential for good policy making

The aim of SENSOR (an environmental sciences IP) is to develop Sustainability Impact Assessment Tools to support decision making on policies related to multifunctional land use (agriculture, forestry, nature reservation, transport infrastructure, energy, and tourism) in European regions. Since human diversity is a major factor in understanding changes in land use, the project takes careful account of key variations, including those based on gender. For example, studies show that predominantly female farmers introduce farm diversification, creating new, post-industrial income opportunities such as tourism and education. Female farmers also have to manage rural enterprises on an autonomous basis, while men take up employment often at a considerable distance from the family household/enterprise. SENSOR takes account of gender variations – alongside other categories such as age and social and professional position – in relation to perceptions and demands regarding land use functions, and concerning migration, income and welfare.

Gender analysis and women's participation lead to better resource management

NeWater, a Sustainable Development IP, integrates a gender dimension into its research on river basin water management. It recognises that women have a major role in many vulnerable river basin societies, especially in developing countries. They are often responsible for obtaining water supplies for home use, and in agriculture and many craft industries. Women and the poor also have the highest vulnerability to water-related risks. As a consequence, women are key members of many of the stakeholder groups involved in the project, and gender sensitive analyses are used in the definition of problems and in the development and validation of potential solutions. Amongst the solutions identified are gender- appropriate new technologies and gender-sensitive systems approaches for defining water use and needs. Improved management solutions include the involvement of women in decision making, gender empowerment for participation, and gender-sensitive communications and responses. NeWater also provides new insights into how gender affects adaptive capacity and vulnerability in river societies, provides new knowledge to underpin policy, and opens up priority areas for further research on gender issues. The project also links the gender dimension to the participation of women as researchers: women must be part of the research in order for women's views as users to be taken into account.

Some sources of useful information and tools

Documents:

- Gender in Research: Gender Impact Assessment of the specific programmes of the 5th Framework Programme, DG Research, 2001. ftp://ftp.cordis.europa.eu/pub/improving/docs/women_gender_impact_fp5_en.pdf
- Gender and Science: An Introductory Bibliography, August 2004. Not up-to-date, but still useful. http://www.hps.cam.ac.uk/research/gs.html
- The Final Reports of the gender monitoring studies of FP6 programmes should, when published, provide lists of relevant resources for specific domains of scientific research.

Web Sites:

- Gender Research Guide by INSTRAW (International Research and Training Institute for the Advancement of Women) http://www.un-instraw.org/en/index.php?option=content&task=view&id=1051&
- Two on-line databases of information and resources on gender and development around the world: http://www.bridge.ids.ac.uk/index.html http://www.siyanda.org/

Europe Direct is a service to help you find answers to your questions about the European Union

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A great deal of additional information on the European Union is available on the Internet.
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Good scientific research cannot be pursued in a social vacuum, and must contribute to Europe's social objectives. In 2000, the European Commission initiated a debate on the relationship between science, society and Europe's citizens, which led to a Science and Society Action Plan. Its aim was to ensure that European research fully contributes to the Lisbon Strategy, whose principal objective is to make the EU the most dynamic and competitive economy in the world by 2010.

During the 6th Framework Programme, covering the four-year period 2002-2006, €88 million were allocated to science and society activities. A new dedicated Science and Society programme pursued a dual approach. On the one hand, the programme supported specific actions on particular science and society themes, such as ethics, gender, scientific advice and governance and communication. On the other hand, FP6-funded research projects - such as Integrated Projects, Networks of Excellence and accompanying actions - were required to integrate science and society issues, as relevant, in their research. This has been named as "embedding" or "horizontal" approach. This booklet presents the main findings of the study aimed at taking stock of the developments and the achievements of the 'embedding' efforts in FP6. It contains the study's recommendations as well as a set of good practices and practical guidelines.

INTEGRATING SCIENCE IN SOCIETY ISSUES IN SCIENTIFIC RESEARCH

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