

# European activities in the field of ethical, legal and social aspects (ELSA) and governance of nanotechnology



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## Introduction

The societal dimension of nanotechnology research forms an integral part of the integrative, responsible and safe approach followed by the European Commission, as being laid out in the European Strategy for nanotechnology (2004), developed further in the Action Plan on nanotechnology (2005) and followed up by the first Implementation Report on the Action Plan (2007).<sup>1</sup> In these Commission Communications it is stated clearly that nanotechnology must be developed in a responsible way, within an open debate that involves the public and that enables interested people to reach their own informed and independent judgements. A milestone to this respect is the code of conduct on research in nanotechnology (2008) which specifies voluntary rules for European scientists and researchers active in nanotechnology.<sup>2</sup>

This publication summarises European activities in the field of ethical, legal and social aspects (ELSA) and governance of nanotechnology. This political and societal dimension of nanotechnology research is gaining importance the more nanotechnology enters the public focus, e.g. by successful product development or new research results on potential risks. ELSA of nanotechnology offer important insights to the interested public by helping to identify expectations and concerns and at the same time they are important for policy makers for responding to these needs in terms of good governance of research, including risk governance.

The European Commission has spent a considerable amount of money on European research projects in nanotechnology in the past 10 years, with increasing funding up to 560 million Euros in 2007. It is considered as being important that these projects are accompanied by measures that identify, analyse and communicate ELSA and that help to reach good governance in nanotechnology. In the Sixth Framework Programme for Research and Technological Development (FP6) between 2002 and 2006 and through various Themes and Actions, the European Commission has financed 20 projects in the field of ELSA and governance of nanotechnology. In FP7 between 2007 and 2013, these activities continue. In parallel and also benefiting from project's assistance and results, the European Commission is carrying out other activities such as the production of information materials and reports, organisation of workshops, and publication of related websites.

This report on European activities in the field of ELSA and governance of nanotechnology present a collection of running or completed projects in FP5, FP6 and FP7 and other Commission activities in the field. Several projects are currently in negotiation for funding under FP7; information will be added as soon as possible. It is the intention to regularly update this information and make it available through the European Commission dedicated websites.

Christos Tokamanis  
Head of the Unit

"Nano- and Convergent Sciences and Technologies"

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<sup>1</sup> See following Communications from the Commission: *Towards a European strategy for nanotechnology* (COM(2004)338), *Nanosciences and nanotechnologies: An action plan for Europe 2005-2009* (COM(2005)243) and *Nanosciences and Nanotechnologies: An action plan for Europe 2005-2009. First Implementation Report 2005-2007* (COM(2007)505)

<sup>2</sup> See the *Commission Recommendation of 07/02/2008 on a code of conduct for responsible nanosciences and nanotechnologies research* (C(2008)424)



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## Ethical, legal and social aspects (ELSA) and governance of nanotechnology

Nanotechnology is an emerging technology that has attracted much interest and attendance from the public in recent years. It has been considered as the new key technology, able to change our lives in many ways. In some areas, nanotechnology is still in its infancy stage requiring much more fundamental research efforts, in others products are already on the market and enter the public focus. Efforts in publically and privately funded research and product development have considerably increased in recent years and scientific and technological progress is developing fast.

As recent debates in the EU and elsewhere demonstrate developments in science and technology do not take place independently from the society. Various actors with different views are shaping the process and it seems very likely that some nanotechnology applications will raise significant ethical, legal or social concerns. This results in a number of important questions about the future of the technology: What will society look like when nanotechnology becomes more mainstream? Will the products be profitable? Are there any negative environmental or health impacts? Who controls the use of nanotechnology? How to deal with liability? Whom will the technology benefit or harm? What are the ethical problems?<sup>3</sup>

Policy makers are challenged to make decisions on further priorities of publically funded research and on regulations. In order to respond to the society's concerns it is of crucial importance to enter into a dialogue on benefits and risks of nanotechnology, including ethical, legal, societal aspects (ELSA) and governance, involving great parts of the public and basing on informed judgement. ELSA of nanotechnology comprise a broad range of topics that are related to the research, production and use of nanotechnology and products enabled by nanotechnology. They cover privacy issues, acceptance, human health, access, liability, regulation and control. Information diffusion to a wide public, multipliers and specific target groups, and discussion fora between nanotechnology stakeholders, policy makers and the public form parts of the overall approach.

These activities are complemented by research on environmental, health and safety (EHS) aspects of nanotechnology, in order to decrease uncertainty about potential risks and benefits on the basis of scientific knowledge, for instance research on the toxicity of nanomaterials and manufactured nanoparticles. These EHS aspects of nanotechnology are relevant for the above mentioned ELSA and governance, but will not be covered by this report, since they are presented somewhere else.<sup>4</sup>

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<sup>3</sup> See results of the Nanologue project, [www.nanologue.net](http://www.nanologue.net).

<sup>4</sup> See Aguar Fernandez, Maria Pilar: *EU nanotechnology R&D in the field of health and environmental impact of nanoparticles*, January 2008, to be downloaded on <http://cordis.europa.eu/nanotechnology>

## Activities on ELSA and governance of nanotechnology in European Member States

Activities on ELSA and governance of nanotechnology in the European Member States do comprise numerous initiatives that cannot all be presented in this report. However, some actions shall be given as examples for presenting nanotechnology to a wider public, to provoke a discussion which addresses societal expectations and concerns, and to inform political decision makers about these topics. This compilation does not have the ambition to be complete or to cover all most important or most well-known initiatives but to present a range of various activities across Europe.

Information campaigns on nanotechnology have been initiated in several European countries. In 2003, the German federal ministry for research and education published a brochure "*Nanotechnologie: Innovationen für die Welt von Morgen*", that has been translated by the European Commission in most EU official languages (see Annex II). Since 2004, the nanoTruck travels through Germany and presents scientific principles and areas of use of nanotechnology ([www.nanotruck.de](http://www.nanotruck.de)). In addition, the website "Interactive journey into the nanocosmos" ([www.nanoreisen.de](http://www.nanoreisen.de)) has been established that shows the nanoscale and the different areas of nanotechnology.

The French research ministry published a website ([www.nanomonde.fr](http://www.nanomonde.fr)) and in 2005 the brochure "*À la découverte du nanomonde*" (<http://www.nanomicro.recherche.gouv.fr/docs/plaq.nanomonde.pdf>) explaining the "nanoworld". In the UK, an interactive webtool on the basics of nanotechnology has been provided by the Oxford University Science Park Begbroke: <http://www.begbroke.ox.ac.uk/nanotech/interface.html>. In 2005, the London Science Museum presented an exhibition on "Nanotechnology: Small Science, Big Deal", accompanied by a web based nanotechnology gallery (See <http://www.sciencemuseum.org.uk/antenna/nano/index.asp>). These information campaigns primarily aim at informing a wider public about nanotechnology, without focusing on (but not neglecting) controversial aspects.

More critical towards nanotechnology are activities that address potential risks and public concerns, confronting the potential benefits and positive expectations. A milestone to this respect was the UK's Royal Society Report "Nanoscience and Nanotechnologies: Opportunities and Uncertainties" ([http://www.nanotec.org.uk/final\\_Report.htm](http://www.nanotec.org.uk/final_Report.htm)) that has been published in July 2004. Several initiatives followed that aim at identifying public concerns. The 'Nanotechnology Engagement Group' was set up to oversee public engagement, through projects such as "Nanodialogues - Experiments in public engagement with science" that been carried out by Demos at Lancaster University in 2005. Members of the public have been asked to join scientists in discussions on regulation, research funding, development and corporate innovation in nanotechnology in order to enable a discussion of the politics of science and to open up new possibilities for science (see <http://www.demos.co.uk/projects/thenanodialogues/overview>).

The nanoJury has been set up jointly by Greenpeace, the Guardian and a several UK universities in 2005. It was a discussion group on nanotechnology of 25 randomly chosen citizens and it was meant as a contribution towards presenting a non-specialist perspective on health, social or environmental impacts and the related need for regulatory institutions (see <http://www.nanojury.org.uk>). The Code of Conduct for Responsible Nanotechnology resulted from an initiative of the Royal Society together with the Nanotechnology Industries Association (NIA). A working group had been

established in order to engage businesses in discussion on the technical, social and commercial uncertainties relating to nanotechnology and to develop this "Responsible NanoCode". It has been published in May 2008 and it presents seven principles of good conduct and examples of good practices to be applied on a voluntary basis by organisations dealing with nanotechnology (<http://www.responsiblenanocode.org>).

In France, the association VivAgora organised a cycle of citizen conferences on nanotechnology, discussing expectations and concerns related to nanotechnology and nanotechnology enabled products. (See <http://www.vivagora.org>) In 2006, Nanomonde ("Nanomonde: quels choix technologiques pour quelle société?") took place in Paris, followed by NanoViv ("Nanobiotechnologies: pour quoi faire? Comment?") in Grenoble. These activities have been followed by another cycle in 2007 and 2008 ("NANOFORUM sur les nanoproduits et la gouvernance des projets dans le champ des nanotechnologies"). On regional level, the French region Île de France has organised citizen's conferences "NanoCitoyens" in 2006 and 2007 discussing the possible impact of nanotechnology on health, ethics, environment and the economy. (see <http://espaceprojets.iledefrance.fr/jahia/Jahia/bca/NanoCitoyens/site/projets>).

## **Nanotechnology in the EC Framework Programmes for Research and Technological Development (FP), including figures on projects on ELSA and governance of nanotechnology**

European activities for ELSA and governance of nanotechnology cannot substitute activities of the European Member States, since ELSA are culturally shaped and governance is often subject to regional or national authorities. However, the importance of the role of European projects should not be neglected: They aim to facilitate cooperation between stakeholders in different Member States, to create a critical mass for topics of European concern, to identify national or cultural differences between regions and Member States or to play the role of a pathfinder for new developments.

On European level, research collaborations between partners from different European Member States are financed by the EC Framework Programmes for Research and Technological Development (FP). These FPs are running several years and address areas of research with a European interest or which support European policies. Nanotechnology started to become a topic in 1998.

In the **5th Framework Programme** (1998 - 2002), the estimated funding level of nanotechnology was about 45 €million per year. The overall budget was 14.96 €billion and comprised four Thematic Programmes and three Horizontal Programmes. Nanotechnology fell under virtually all programmes; the overall project portfolio was very wide in scope, encompassing for example nano-electronic devices, giant magneto-resistance, carbon nano-tubes, bio-sensors, molecular diagnostics, nano-composite materials, atomic force microscopes etc. Only one project had been funded that directly refers to governance in nanotechnology: Nanoforum, the Pan-European Forum for Nanotechnology, with a budget of 2.76 million Euro.

The **6th Framework Programme** (2002 - 2006) contained a strong focus on nanotechnology. Out of a total proposed funding of 17.5 €billion, 1.3 €billion has been devoted to the priority thematic area of research on Nanotechnology, knowledge-based materials and new industrial processes (NMP). Within an integrated approach, long term projects (research and networks) have been funded with the aim of stimulating the introduction of nanotechnologies in existing industrial sectors and/or of originating novel breakthroughs, which can lead to entirely new materials, new devices, new products and new industries.

Although the **FP6-NMP** Programme focused on scientific and technological research, it explicitly included topics related to ELSA of nanotechnology, mostly in form of specific support actions aiming at communicating with the public and networking between stakeholders. In the field of ELSA and governance, several other programmes fund projects related to nanotechnology, such as the Science and Society, the New and Emerging Science and Technology (NEST) or the Citizens and Governance programme.

The **Science and Society** ('Society') Programme aimed to develop structural links between institutions and activities concerned with the dialogue between the scientific community and society at large, in order to bring research closer to society, and to promote responsible research and application of science and technology. This included actions aiming at promotion of dialogue in a global context; awareness raising, training, research on ethics in relation to science and technology; uncertainty, risk and the

precautionary principle; public awareness of science and science communication; awards for scientific achievement collaboration and communication; promoting young people's interest in science and scientific careers; and promoting women in science. These topics are important elements of the chapter on societal issues of the European Strategy and Action Plan on Nanotechnology and therefore most appropriate to fund research in this field of study of nanotechnology.

The **Citizens and Governance** Programme ('Citizens') aimed at providing a sound scientific base for the management of the transition towards a European knowledge based society, conditioned by national, regional and local policies and by decision making by individual citizens, families and other societal units. This includes actions aiming at improving generation, distribution and use of knowledge and at the development of new forms of governance.

The Programme on **New and Emerging Science and Technology** (NEST) supported unconventional and visionary research with the potential to open new fields for European science and technology. NEST also supported research on new potential problems uncovered by science and helps to consolidate European efforts in emerging fields of research. It is therefore an appropriate funding mechanism for funding nanotechnology research projects, especially in basic and long-term research projects on topics that are not covered by the thematic priorities of FP6. This includes specific support actions in socio economic research, relevant for ELSA and governance in nanotechnology.

For FP6, we counted **20 projects related to ELSA and governance of nanotechnology**, most of them being specific support actions or coordination actions. Some of them are directly focused on nanotechnology, others are treating nanotechnology as a case study, and others can be applied to nanotechnology. While the overall EC funding of these projects amounts to 15,854,259 Euro, the "nano share" has been calculated by deducing the share which is not directly relevant for nanotechnology. Doing this, an amount of **8,849,400 Euro**, specifically aiming at ELSA and governance of nanotechnology, remains.

The **7th Framework Programme** (2007-2013) does - for the first time - last for seven years and it is structured along four specific programmes: Cooperation, Ideas, People and Capacities. A considerable increase of the budget is foreseen for nanotechnology, which forms part of Theme Four "Nanosciences, nanotechnologies, materials and new production technologies - NMP" within the Cooperation programme but will be addressed by many other Themes and specific programmes. The total budget of FP7 is 50,521 million Euro with 3,467 million Euro for NMP. Similarly to FP6, Programmes most relevant for funding ELSA and governance of nanotechnology are the FP7-NMP and the Science in Society programme.

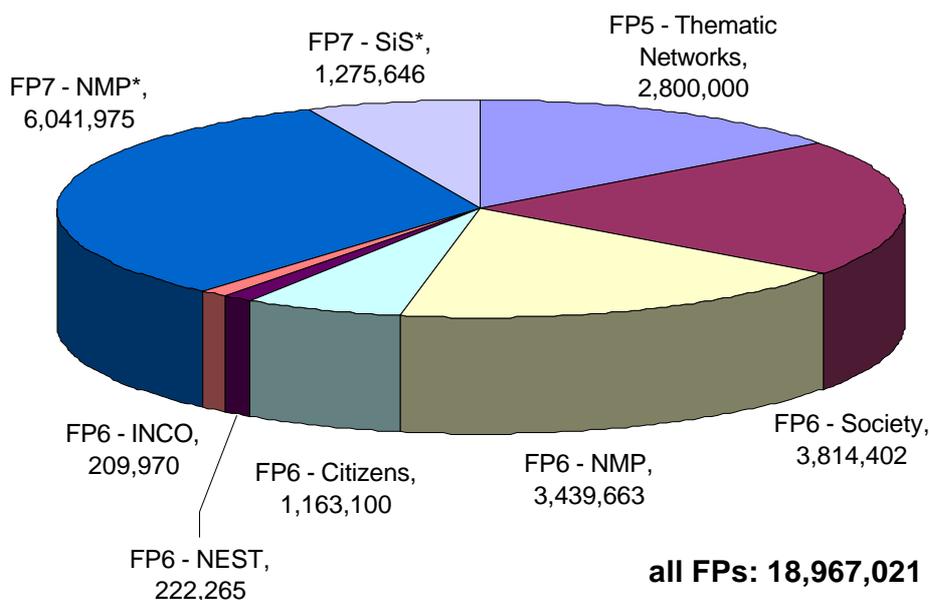
In the 2007 and 2008 work programmes of the **FP7-NMP** Theme and the **Science in Society** (SiS) Action, several calls for proposal had a particular relevance for ELSA and governance for nanotechnology:

§ SiS-2007-1.2.3.2-CT Nanoscience and Nanotechnology - Process inviting researchers, policy makers, citizens, ethicists and CSOs to combine their skills, knowledge and understanding in an attempt to provide a societal framework for a responsible development of NS&T in the European Union (Coordination and support action)

- § NMP-2007-1.1-3 Support to networking ICPC researchers in nanotechnology and creation of a free and open electronic archive of nanosciences and nanotechnologies scientific and technical publications (support action)
- § NMP-2007-1.1-4 Development of methodology, collection and elaboration of scientific-technical and socio-economic data and studies on nanosciences and nanotechnologies, including risk assessment, and establishment of an observatory (support action)
- § NMP-2007-1.2-3 Analysis of the ethical, regulatory, social and economic environment of nanomedicine (support action)
- § NMP-2008-1.1-2 Support to outreach and communication in nanotechnology (support action)
- § NMP-2008-1.1-3 Examining capacity building in nanobiotechnology (support action)
- § NMP-2008-1.2-4 Study about best practices for IPR and licence agreements for collaborative research and technological development projects in nano and converging technologies (support action)

Projects resulting from these calls are currently under negotiation, only those which have finalised their negotiation are included in this report and the following graphs. Updates will be done regularly as soon as the information is available.

**Figure 1: Distribution of EU funding on ELSA and governance of nanotechnology in FP5, FP6 and FP7\*, nano-share, given in Euro**

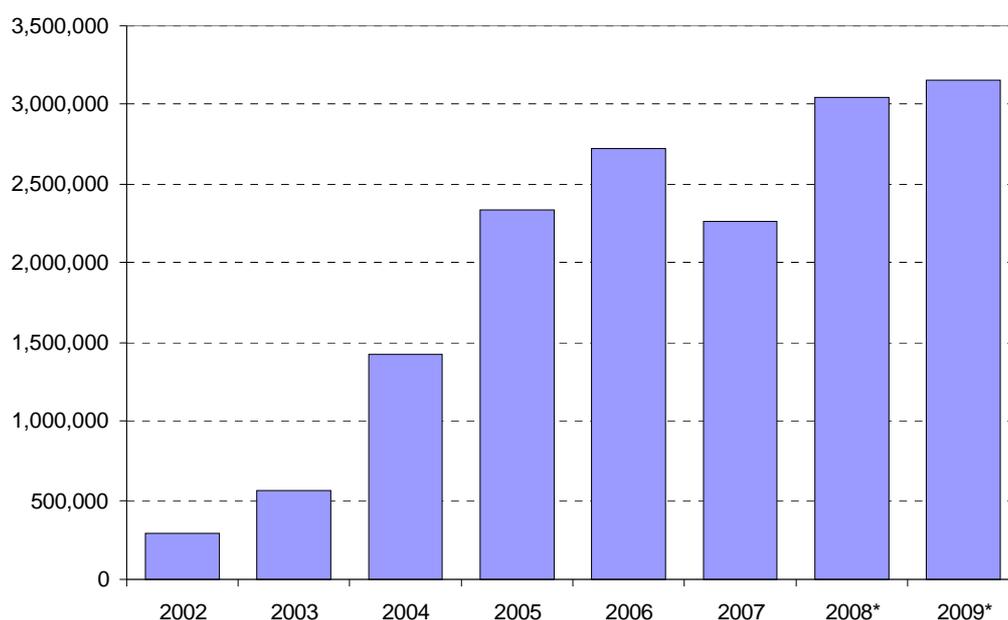


Notes: Includes funding from 2001 to 2012. Amount has been estimated according the share directly related to nanotechnology, see also Annex I. \* Data for FP7 are not complete.

For FP6, the Science and Society programme accounts for the largest amount of budget for projects (9 projects) in ELSA and governance in nanotechnology, followed by the FP6 NMP (5 projects), Citizens (3), NEST (2) and INCO (International cooperation, 1 project) programmes. In average, each of these projects is funded with 440,000 Euros. This average funding increased with the first FP7 funded projects, which are 3 so far in FP7 NMP and 2 in Science in Society and which are funded with 1,460,000 Euros in average. This substantial increase of the averages is mainly due to

the two NMP support actions nano-observatory and the international scientific database, which have a long duration and which play a significant role for supporting European policy making. They have a similar role as the FP5 Thematic Network Nanoforum did, which was the only FP5 project directly related to ELSA and governance of nanotechnology. Many of the other coordination and support actions of FP5, FP6 and FP7 are explicitly set up as short term studies or networking activities with relatively low budget and – if successful – high impact. For more details on the projects see Annex I of this report.

**Figure 2: Distribution of EU funding on ELSA and governance of nanotechnology in all FPs by year, nano-share, given in Euro**



Notes: Includes funding from FP5 to FP7. Amount has been estimated according the share directly related to nanotechnology, see also Annex I. \*Data for 2008 and 2009 are not complete.

In Figure 2, the funding is broken down by year. This breakdown is based on the simplistic assumption that the funding is equally distributed across the duration of the projects and that all committed EC funding is exhausted. The graph shows a continuous increase between 2002 and 2006 (duration of FP6) from 250,000 Euro to 2,700,000 Euro. The drop in 2007 is mainly due to the change of FPs; FP6 finished in 2006 and for FP7, first calls have only been published end of 2007. Therefore, only one project in ELSA and governance of nanotechnology started in 2007. The incomplete figures for 2008 show that the increase will most probably continue, also having in mind the projects in negotiation resulting from the above mentioned calls.

The figures presented only display the funding for projects that primarily focus on ELSA and governance of nanotechnology and which are in most cases support actions, aiming at supporting the European policy in this field. However, there are several EU funded projects, in particular within the NMP and IST/ICT themes, which focus on technological research but put a strong emphasis on ELSA relevant issues such as communication and ethical training. Examples are the FP6-NMP funded Networks of Excellence FRONTIERS and NANO2LIFE which dedicate a substantial amount of their resources (EU contribution is 5 and 8.8 million Euro respectively) to these aspects.

This funding is not included in the figures presented above which therefore can only present the bottom line of EU funding dedicated to ELSA and governance of nanotechnology. In addition, the European Commission spent some monetary resources on information material and events related to nanotechnology, as presented in Annex II, which roughly add up to 2 million Euro. This figure also misses in the above compilation of EU funding related to ELSA and governance of nanotechnology.

## Annex I: EU funded projects

<b>FP5 projects:</b>		<i>Page:</i>
NANOFORUM	Pan-European Forum for Nanotechnology	18
STAGE	Science Technology and Governance in Europe: Challenges of Public Engagement	17
 <b>FP6 projects:</b>		
ATBEST	Assessment tools for breakthroughs in S&T	19
CONTECS	Converging Technologies and their Impact on Social Sciences and Humanities	31
CREA	Creativity capabilities and conduct of highly innovative research in Europe and the US	25
DECIDE	Deliberative Citizens' debates in European science centres and museums	24
DEEPEN	Deepen Ethical Engagement and Participation in Emerging Nanotechnology	36
ETHICSCHOOL	Summerschools on Nano Technologies and Converging Technologies	38
EUROINDIANET	Bridging the Gap between Europe and India's Nanotechnology Knowledge Bases towards an Understanding of Innovative Support Structures, Training Programmes and Policies	32
KNOWLEDGE NBIC	Knowledge Politics and New Converging Technologies: A Social Science Perspective	33
MESSENGER	Media, Science and Society: Governance and Engagement in Europe	27
NANOBIORAISE	Nanobiotechnology: Responsible Action on Issues in Society and Ethics	30
NANOCAP	Nanotechnology Capacity Building NGOs	35
NANODIALOGUE	Enhancing dialogue on nanotechnologies and nanosciences in society at the European level	28
NANOFORUMEULA	Nanoforum EU-Latin America	37
NANOLOGUE	Facilitating the dialogue between research, business and the civil society to improve the quality of life, create wealth and reduce impacts to society	26
NANOROAD SME	Development of Advanced Technology Roadmaps in Nanomaterial Sciences and Industrial Adaptation to Small and Medium sized Enterprises	21
NANOROADMAP	Technological roadmaps till 2014 in nanoscience and nanotechnologies in materials, health and medical systems, energy fields	22
PATH	Participatory approaches in S&T	23
PRIME	Publics for Research and Innovation in the Move towards the European Research Area	20

RISKBRIDGE	Building Robust, Integrative Interdisciplinary, Governance Models for Emerging and Existing risks	34
WOMENINNANO	Strengthening the Role of Women Scientists in Nano-Science	29
<b>FP7 projects:</b>		
FRAMINGNANO	International multi-stakeholder dialogue platform framing the responsible development of Nanosciences and Nanotechnologies (NS&T)	41
ICPC NANONET	A web-based repository of nanoscience and nanotechnology publications, database of researchers and online forum, to inform and facilitate networking between EU and ICPC RTD	42
NANOMED ROUND TABLE	Nanomedicine ethical, regulatory, social and economic environment	43
NANOPLAT	Development of a Platform for Deliberative Processes on Nanotechnology in the European Consumer Market	39
OBSERVATORY -NANO	European observatory for science-based and economic expert analysis of nanotechnologies, cognisant of barriers and risks, to engage with relevant stakeholders regarding benefits and opportunities.	40

*The projects are listed in order of their starting dates*

## STAGE

- Title:** Science Technology and Governance in Europe: Challenges of Public Engagement
- Coordinator:** Peter Healey, Brunel University, Uxbridge, United Kingdom
- Partners:**
- CES, Coimbra University, Portugal
  - University of Patras, Greece
  - NIFU Oslo, Norway
  - Goteborg University, Sweden
  - University of Helsinki, Finland
  - University of Copenhagen, Denmark
  - Universiteit van Amsterdam, The Netherlands
- Duration:** 39 months
- Start Date:** 15/09/2001
- End date:** 14/12/2004
- EU funding:** 400,000 Euros
- Instrument:** Thematic Network
- Programme:** FP5 – HPSE - Improving Human Potential and the Socio-Economic Knowledge Base
- Website:** <http://www.stage-research.net>

STAGE aimed to develop and refine a heuristic model of science and technology governance in Europe. Its approach has been one of iteration between conceptual overview and synthesis of work under FP4 and FP5 and the wider literature and 29 analytic case studies, based on existing research, of how policy cultures confront the governance of particular technologies, particularly in relation to wider public engagement. Through this process STAGE aimed to understand more about the structure, process and boundary characteristics of national policy cultures in confronting common issues of science and technology governance, including those that arise from, or contribute to, the implementation of European regulation; to analyse the particular science and technology issues, actors and processes which each policy culture highlights in relation to three technology domains – ITC, genetic modification in relation to food and medicines, and environmental management – examining particular mediating/brokering institutions and processes which construct issues, rhetorics and repertoires of response; to offer in consequence a more secure knowledge base to frame policy and practice concerning wider social participation in the governance of science and technology.

STAGE organised a workshop on social and economic research in nanotechnology for the European Commission in April 2004.

*The share of this project directly relevant for nanotechnology is estimated as being 10 percent.*

## NANOFORUM

- Title:** Pan-European Forum for Nanotechnology
- Coordinator:** Mark Morrison, Institute of Nanotechnology, United Kingdom
- Partners:**
- CEA-LETI, France
  - VDI-Technologiezentrum, Germany
  - Malsch Technovaluation, The Netherlands
  - FFG – Austrian research Promotion Agency, Austria
  - Middle-East Technical University, Turkey
  - High Pressure Research Centre, Poland
  - Sofia University, Bulgaria
  - NanoNed, The Netherlands
- Duration:** 60 months
- Start Date:** 08/07/2002
- End date:** 07/07/2007
- EU funding:** 2,760,000 Euros
- Instrument:** Thematic Network
- Programme:** FP5 – GROWTH - RTD Activities of a Generic Nature: materials and their technologies for production and transformation and new and improved materials and production technologies in the steel field
- Website:** <http://www.nanoforum.org>

The Pan-European Forum for Nanotechnology, Nanoforum, provides a comprehensive source of information on all areas of Nanotechnology to the business, the scientific and social communities. The main vehicle is the website [www.nanoforum.org](http://www.nanoforum.org), on which available information on nanotechnology such as news articles, reports, events, funding opportunities and company information is published. The Nanoforum consortium produces reports, conducts survey and organises workshops on different aspects of nanotechnology. In addition, it offers educational material and a discussion platform on nanotechnology issues. Though mainly targeting nanotechnology stakeholders such as researcher, companies and policy makers, Nanoforum provides a wide range of information relevant for the wider and lay public.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## ATBEST

<b>Title:</b>	Assessment tools for breakthroughs in S&T
<b>Coordinator:</b>	Arie Rip, Universiteit Twente, Enschede, The Netherlands
<b>Partners:</b>	- Association pour la Recherche et le Développement des Méthodes et Processus Industriels - The University of Edinburgh, United Kingdom
<b>Duration:</b>	12 months
<b>Start Date:</b>	1/01/2004
<b>End date:</b>	31/12/2004
<b>EU funding:</b>	196,360 Euros
<b>Instrument:</b>	Specific Support Action
<b>Programme:</b>	FP6 - NEST-2003-3 NEST Support
<b>Website:</b>	<a href="http://www.rcss.ed.ac.uk/atbest">http://www.rcss.ed.ac.uk/atbest</a>

ATBEST is a social science project funded by the NEST Programme. It is not focused on nanotechnology, but it develops a process approach, with corresponding tools, for the management of new and emerging science and technology, employing fuel cells and nanotechnology as case studies. In these fields uncertainty is great, but hoped-for potential is great as well. There is experience with newly emerging science and technology, and recognition of their importance, but these experiences have not developed to a level that one can identify already 'best practices'. This project builds on what has been learnt already, so as to characterize assessment approaches and corresponding tools that address the new challenges. The tools will be validated by practitioners working in these new and emerging, potentially breakthrough fields. If successful, the tool kit will be a valuable asset for actors, ranging from policy makers to researchers in public and private laboratories.

*The share of this project directly relevant for nanotechnology is estimated as being 50 percent.*

## PRIME

<b>Title:</b>	Publics for Research and Innovation in the Move towards the European Research Area
<b>Coordinator:</b>	Philippe Laredo, Association pour la Recherche et le Développement des Méthodes et Processus Industriels
<b>Partners:</b>	49 institutions from 16 European countries:
<b>Duration:</b>	60 months
<b>Start Date:</b>	01/01/2004
<b>End date:</b>	31/12/2008
<b>EU funding:</b>	5,500,000 Euros
<b>Instrument:</b>	Network of Excellence
<b>Programme:</b>	FP6 – Citizens-2002-1.1.3 Science and technology in the knowledge based society
<b>Website:</b>	<a href="http://www.prime-noe.org/">http://www.prime-noe.org/</a>

PRIME is a Network of Excellence funded by the Citizens programme. It addresses the major transformations that research and innovation policies are currently facing. The first relates to the changing dynamics of knowledge production, with the new search regime of the new leading NBIC (Nano, Bio, Information, Cognitive) sciences, and with the research intensification of many industries and services. The second transformation is linked to the changing relationship between science and society, with the burgeoning of controversies and public debates about priorities and research practices (such as field trials of genetically modified organisms). The third one concerns the growing importance of both regional and European public authorities. The PRIME Network does not have nanotechnology in its focus, but covers aspects related to nanotechnology in some of the working groups and includes nanotechnology in the NBIC topic.

*The share of this project directly relevant for nanotechnology is estimated as being 10 percent.*

## NANOROAD SME

- Title:** Development of Advanced Technology Roadmaps in Nanomaterial Sciences and Industrial Adaptation to Small and Medium sized Enterprises
- Coordinator:** Jonathan Löffler, Steinbeis Europazentrum, Karlsruhe, Germany
- Partners:**
- Malsch Technovaluation, The Netherlands
  - Comité Richelieu, France
  - Chambre Reg. de Commerce et d'Industrie de Bourgogne, France
  - VTT Valtion Teknillinen Tutkimuskeskus, Finland
  - Stichting Syntens, The Netherlands
  - Fraunhofer Ges. zur Förderung der Angew. Forschung, Germany
  - Forschungszentrum Karlsruhe, Germany
  - Universidad Politecnica de Madrid, Spain
  - Universidad Complutense de Madrid, Spain
  - Österreichische Forschungsförderungsgesellschaft, Austria
  - Institute of High Pressure Physics, Poland
- Duration:** 24 months
- Start Date:** 01/04/2004
- End date:** 31/03/2006
- EU funding:** 1,100,000 Euros
- Instrument:** Specific Support Action
- Programme:** FP7 - NMP-2002-3.4.1.5-1 Roadmaps for nanotechnology
- Website:** [www.nanoroad.net](http://www.nanoroad.net)

The project NANO ROAD SME develops technology roadmaps in the domain of nanomaterials comprising the latest scientific results by using a dynamic and holistic approach. Their functions are to identify trends in research and development and to associate them to product and application visions. They outline, which of them are technically and economically promising or possess high potentials for problem solving and where potential risks and relevant investigation requirements are assumed or social discussion requirement could prevail. In a second step these roadmaps are adapted to the SME industrial culture in order to facilitate the integration of the European RTD results for substrate in the different industrial branches. The project involves well-known European research organisations and networks, which are leaders in the domain of substrate, European experts in the development of technology roadmaps and organisations specialised in the knowledge transfer to the industry and especially to SMEs.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## NANOROADMAP

- Title:** Technological roadmaps till 2014 in nanoscience and nanotechnologies in materials, health and medical systems, energy fields
- Coordinator:** Guido Frigessi di Rattalma, Associazione per la Ricerca Industriale AIRI, Roma, Italy
- Partners:**
- YOLE Developpement, France
  - Institute of Nanotechnology, United Kingdom
  - VDI/VDE- Technologiezentrum Informationstechnik, Germany
  - VTT Valtion Teknillinen Tutkimuskeskus, Finland
  - MATIMOP Israeli Industry Center for Research and Development, Israel
  - Technologicke Centrum Akademie ved Ceske Republiky, Czech Republic
  - Willems & Van Den Wildenberg, Spain
- Duration:** 27 months
- Start Date:** 01/04/2004
- End date:** 30/06/2006
- EU funding:** 650,000 Euros
- Instrument:** Specific Support Action
- Programme:** FP6-NMP-2002-3.4.1.5-1 Roadmaps for nanotechnology
- Website:** [www.nanoroadmap.it](http://www.nanoroadmap.it)

The primary objective of NANOROADMAP is to produce roadmaps for the application of Nanotechnology in three industrial fields (materials, health and medical systems and energy) that will cover the next ten years. Selected themes will be investigated in great detail with extensive face-to-face communication through working groups, Delphi panels, conferences and (web-enabled) foray. The assessment will focus on drivers of change, scientific and technical challenges and barriers, market demands and funding needs, R&D strategies, infrastructures relevant for research and application of Nanotechnologies, social and ethical issues. Dissemination, discussion and feedback of the results are a crucial part of the project. With specific web sites, distribution of documents, articles and release in the press, direct contacts and, in particular, with the organisation of 2 International Symposia and 8 National Conferences.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## PATH

- Title:** Participatory approaches in S&T
- Coordinator:** Wendy Kenyon, Macaulay Institute, Craigiebuckler, United Kingdom
- Partners:**
- Universita Degli Studi di Roma "La Sapienza", Italy
  - Universität Stuttgart, Germany
  - Universitat Autònoma de Barcelona, Spain
  - UFZ – Umweltforschungszentrum Leipzig-Halle, Germany
  - The Danish Board of Technology, Denmark
  - Agricultural University of Norway, Norway
  - Lancaster University, United Kingdom
- Duration:** 33 months
- Start Date:** 01/04/2004
- End date:** 31/12/2006
- EU funding:** 200,000 Euros
- Instrument:** Coordination Action
- Programme:** FP6 – Society-2003-1.1 Science and governance: analyse and support best practice, develop new consultation mechanisms
- Website:** <http://www.macaulay.ac.uk/socioeconomics/research/path/>

The PATH project is a network bringing together academics, practitioners, policy-makers and stakeholders to exchange knowledge and develop future directions for the involvement of society in the deliberation of science-based policy issues. To date, participatory processes have largely been used at a local scale. However, many policy challenges are relevant to a regional or international scale and hence guidance on how participatory processes can be scaled-up is a pertinent issue. Of key concern in such processes is how best to represent a diverse and diffuse public as well as 'silent voices' (e.g. children, future generations). These two cross-cutting themes of representation and scale are explored at a generic level, and via three case study areas, namely: genetically modified organisms (GMOs) in agriculture, biodiversity conservation and nanotechnology.

*The share of this project directly relevant for nanotechnology is estimated as being 33 percent.*

## DECIDE

- Title:** Deliberative Citizens' debates in European science centres and museums
- Coordinator:** Catherine Aldridge, AT-Bristol, United Kingdom
- Partners:**
- Fondazione IDIS – Città della Scienza, Italy
  - ECSITE-The European Network of Science Centres and Museums
  - Heureka-the Finnish Science Centre, Finland
  - Cité des Sciences et de l'Industrie, France
- Duration:** 18 months
- Start Date:** 01/11/2004
- End date:** 30/04/2006
- EU funding:** 330,000 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 – Society-2003-3.1 Public understanding and confidence; Society 1.1 Science and governance: analyse and support best practice, develop new consultation mechanisms
- Website:** <http://www.playdecide.org>

DECIDE aims at raising awareness and at understanding of deliberative democracy methods by producing a tool to conduct and facilitate deliberative consultations and monitoring the change of attitudes among the European public on contemporary Life Sciences. The project produces a "kit" to facilitate structured debates on controversial issues (xenotransplantation, stem cells, genetic testing, neuroscience, HIV/Aids, climate change, nanotechnology) in science centres and museums across Europe. The topics have a direct link to current policy discussions. The kit includes a series of "cards" representing facts, issues, policies and scenarios (participants will be able add their own arguments as required) that help participants to visualize the debate on a discussion board and reach consensus. All the products developed by DECIDE are made available for free to everybody.

*The share of this project directly relevant for nanotechnology is estimated as being 20 percent.*

## CREA

<b>Title:</b>	Creativity capabilities and conduct of highly innovative research in Europe and the US
<b>Coordinator:</b>	Thomas Heinze, Fraunhofer Institute for Systems and Innovation Research, Karlsruhe, Germany
<b>Partners:</b>	- University of Sussex, United Kingdom - Georgia Tech Research Cooperation, United States
<b>Duration:</b>	18 months
<b>Start Date:</b>	01/01/2005
<b>End date:</b>	30/06/2006
<b>EU funding:</b>	248,170 Euros
<b>Instrument:</b>	Specific Support Action
<b>Programme:</b>	NEST-2003-3 NEST Support
<b>Website:</b>	<a href="http://www.crea.server.de">http://www.crea.server.de</a>

CREA aims to understand the production and emergence of highly creative and innovative research in Europe and the United States. The project pursues three objectives. First, it delineates and will apply a methodology allowing for both the definition of research excellence and creative capability, and the identification of relevant individuals and organisational units (to be applied in Europe and the United States). Second, the project explores and analyses institutional characteristics at the micro, meso and macro-levels enabling and fostering highly creative and unconventional research activities. The objective is to probe the individual, organisational, network and research system characteristics enabling and fostering highly creative and unconventional research activities. The third objective is to gain a better understanding of how to influence the factors underlying research creativity so as to devise research, technology and development programmes tools and management practices that will make the programmes attractive to highly creative researchers and organisational units and enable them to pursue unconventional but potentially promising research avenues. Nanoscience and Genetics are chosen as fields of analysis because they are emerging science and technology making promising results more likely than in established fields.

*The share of this project directly relevant for nanotechnology is estimated as being 50 percent.*

## NANOLOGUE

- Title:** Facilitating the dialogue between research, business and the civil society to improve the quality of life, create wealth and reduce impacts to society
- Coordinator:** Volker Türk, Wuppertal Institute for Climate, Energy and the Environment, Germany
- Partners:**
- Triple Innova, Germany
  - Swiss Federal Laboratories for Materials Testing and Research (EMPA), Switzerland
  - The Forum for the Future, United Kingdom
- Duration:** 21 months
- Start Date:** 01/02/2005
- End date:** 31/10/2006
- EU funding:** 339,663 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 – NMP-2003-3.4.1.5-2 Ethical, legal, social aspects of research in nanotechnology
- Website:** <http://www.nanologue.net>

NANOLOGUE's overarching objective is to help establish a common understanding concerning social, ethical and legal aspects of nanotechnology applications and to facilitate a Europe-wide dialogue among science, business and civil society about its benefits and potential impacts. In a first project phase key findings from a Mapping Study on ethical, legal and social aspects (ELSA) of nanotechnologies are summarised and a Background Paper on the application areas energy conversion and storage, food packaging and medical diagnosis is compiled. The second phase results in a study on Opinions on the ethical, legal and social aspects of nanotechnologies based on the consultation of representatives from research, business and civil society. Finally the project partners developed three scenarios on the future of nanoscience published in *We need to talk: the future of nanotechnology*. Insights gained throughout the project have also been used for the design of the NanoMeter - an internet-based tool assessing societal implications of nanotechnology.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## MESSENGER

<b>Title:</b>	Media, science & society - engagement & governance in Europe
<b>Coordinator:</b>	Simon Bradley, Social Issues Research Centre, United Kingdom
<b>Partners:</b>	- Universiteit van Amsterdam, The Netherlands
<b>Duration:</b>	12 months
<b>Start Date:</b>	15/02/2005
<b>End date:</b>	14/02/2006
<b>EU funding:</b>	267,480 Euros
<b>Instrument:</b>	Specific Support Action
<b>Programme:</b>	FP6 – Society-2004-1-Science and governance: analyse and support best practice, develop new consultation mechanisms
<b>Website:</b>	<a href="http://www.messenger-europe.org">http://www.messenger-europe.org</a>

The general objectives of MESSENGER are to contribute to the informed debate among scientists, journalists and representatives of civil society concerning the production of science, technology and health news, and the communication of risk in this context. It aims to identify opportunities for appropriate engagement of relevant stakeholders and actors in the governance of scientific research and its applications in Europe and to determine perceptions of media coverage of science, technology and health issues in a representative sample of EU countries. It also aims to facilitate and improve the quality of dissemination of scientific information and advice through the mass media in Europe and to generate specific outputs of practical value in improving the transmission of scientific information and advice.

Media analysis of science, technology and health issues across Europe to assess the cultures, roles and styles of the media in communicating science and detailed analyses of media coverage of biotechnology, nuclear research, reproduction and stem cell research as well as nanotechnology have been conducted in six EU member states.

*The share of this project directly relevant for nanotechnology is estimated as being 25 percent.*

## NANO DIALOGUE

- Title:** Enhancing dialogue on nanotechnologies and nanosciences in society at the European level
- Coordinator:** Luigi Amodio, Fondazione IDIS - Città della Scienza, Naples, Italy
- Partners:**
- Associazione Macroscopic Quantum Coherence and Computing, Italy
  - University of Westminster, Centre for the Study on Democracy, United Kingdom
  - ECSITE-The European Network of Science Centres and Museums
  - Centre de Culture Scientifique, Technique et Industriel de Grenoble, France
  - Flanders Technology International Foundation, Belgium
  - Deutsches Museum München, Germany
  - Universeum AB, Sweden
  - Ciência Viva-Agência Nacional para a Cultura Científica e Tecnológica, Portugal
  - Ahhaa Science Centre, Estonia
  - Parc Científic de Barcelona, Spain
- Duration:** 24 months
- Start Date:** 01/03/2005
- End date:** 28/02/2007
- EU funding:** 850,000 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 – NMP-2003-3.4.1.5-2 Ethical, legal, social aspects of research in nanotechnology
- Website:** [www.nanodialogue.org](http://www.nanodialogue.org)

The NANO DIALOGUE project aims at providing information and raising awareness among the general public on the last developments of research nanotechnologies and nanosciences. Secondly, it implements social dialogue at European level between the research community, citizens and other social actors in order to identify main issues and expectations from these groups. An outcome of the project is to provide the European Commission and experts with recommendations, illustrating the main social concerns about nanotechnology. The project elaborates a common synopsis for communication tools and produces 8 exhibition modules and a web site including specific tools for collecting data on citizens' expectations. It organises exhibitions and events in 8 participating countries during 6 months at least and a European Conference targeted to relevant experts, decision makers and stakeholders.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## WOMENINNANO

- Title:** Strengthening the Role of Women Scientists in Nano-Science
- Coordinator:** Annett Gebert, Leibniz-IFW, Dresden, Germany
- Partners:**
- Universidad Complutense de Madrid, Spain
  - Consiglio Nazionale delle Ricerche, Italy
  - Universidad Autónoma de Barcelona, Spain
  - Centre National de la Recherche Scientifique, France
  - Universität Hamburg, Germany
  - Chalmers Tekniska Hoegskola, Sweden
  - Universitea Politehnica din Bucuresti, Romania
  - Institut Jozef Stefan, Slovenia
  - Bulgarian Academy of Sciences, Bulgaria
- Duration:** 30 months
- Start Date:** 01/10/2005
- End date:** 31/03/2008
- EU funding:** 533,860 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 – Society-2004-3.3.1 Empowerment of women scientists; and public debate, -3.3.2 Ambassadors for Women and Science
- Website:** <http://www.womeninnano.de>

WomenInNano represents a network high-level female scientists (11 women scientists from 9 European countries) working in Nano-Science. The project aims at encouraging young women to consider studies and pursue careers in nanoscience (providing "role models"); attracting youth to "NANO"; networking and empowering women scientists working in Nano-Science at national, regional and European level; stimulating female scientists to participate in EU programmes; mobilising stakeholders in favour of gender equality in scientific research; stimulating the science-society dialogue. In the first stage, the team reviews the state of the art in Nano-Science, identifies and maps the competences and makes a data base of women scientists in this field at national, regional and European level. In a second stage, mass media appearances, participation at open and public events (of "Open house day", "Girls Day"-type), visits to schools, workshops, summer school are organised, all these representing a campaign to make the scientific career more attractive, especially for young women. This stage also aims at enhancing the role of women scientists in the international nanotech community and supporting further networking. A third stage is dedicated to communicating and making contact with decision making-persons at national and European level concerning the gender dimension of scientific research with the aim to develop the "best practice" policies in the recruitment and employment of scientists.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## NANOBIO-RAISE

- Title:** Nanobiotechnology: Responsible Action on Issues in Society and Ethics
- Coordinator:** Daan Schuurbijs, Technische Universiteit Delft, the Netherlands
- Partners:**
- Cambridge Biomedical Consultants, the Netherlands
  - Universität Münster, Germany
  - DECHEMA-Gesellschaft für Chemische Technik und Biotechnologie, Germany
  - EUROPABIO-The European Association of Bioindustries
  - Kungliga Tekniska Högskolan, Sweden
  - The Church of Scotland, United Kingdom
- Duration:** 24 months
- Start Date:** 01/11/2005
- End date:** 31/10/2007
- EU funding:** 553,854 Euros
- Instrument:** Coordination Action
- Programme:** FP6 – Society-2004-4.3.2.3 Deepening the understanding of ethical issues
- Website:** <http://nanobio-raise.org/>

NanoBio-RAISE combines ethics research in nanobiotechnology with science communication. It is an interdisciplinary project that brings together nanobiotechnologists, ethicists and communication specialists with the aims to anticipate the societal and ethical issues likely to arise as nanobiotechnologies develop. Lessons from debate on Genetical Modification are used to respond to the probable public and political concerns resulting from scientific and commercial developments in nanotechnology. This involves clarifying ethical issues involved or as they arise, and recommending and carrying out strategies for public communication to address the emerging questions; incorporating the recommendations of the European Commission's Communication "Towards a European Strategy for Nanotechnology" and the results of the Nanoforum public consultation which surveys European public opinion on these issues. The project implements these objectives by means of: an expert group, on-line forum & bibliographic database; horizon scanning workshops; public opinion focus group discussions; ethics & public communication courses for nanobiotechnologists; briefing papers for specific audiences, ethics lecturers, professional public relations and website; support to EC Nanotechnology Action Plan.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## CONTECS

<b>Title:</b>	Converging Technologies and their Impact on Social Sciences and Humanities
<b>Coordinator:</b>	Michael Friedewald, Fraunhofer Institute for Systems and Innovation Research, Karlsruhe, Germany
<b>Partners:</b>	- Institut d'Expertise et de Prospective de l'École Normale Supérieure, France - Forschungszentrum Karlsruhe, Germany - University of Oxford, United Kingdom
<b>Duration:</b>	27 months
<b>Start Date:</b>	01/02/2006
<b>End date:</b>	30/04/2008
<b>EU funding:</b>	426,200 Euros
<b>Instrument:</b>	Specific Support Action
<b>Programme:</b>	FP6 - Citizens-2004-8.3.3 Promoting international research and policy cooperation in social sciences and humanities
<b>Website:</b>	<a href="http://www.contecs.fraunhofer.de">http://www.contecs.fraunhofer.de</a>

CONTECS addresses the potential roles that the social sciences and humanities can play with regard to phenomenon of technological convergence (between Nano-, Bio-, Information technologies, Cognitive sciences and Social sciences and Humanities), its shaping and ethical and societal implications. In an integrated and systemic approach the project explores the major ethical and societal questions raised by technological development in the field of converging technologies and the ways in which these can be addressed by the Social Sciences and Humanities. In the context of imminent transformations to a European knowledge-based society, these questions present key opportunities and challenges, which the research community needs to be prepared to face. This activity will build on a continuous review and monitoring of technological developments in the converging technologies and relevant global research policy trends, at the same time analysing their possible implications for contributions by the social sciences and humanities. Nanotechnology is not in the focus of this project, but it is an essential element of the converging technologies and therefore implicitly included in the analysis of related ethical and societal questions.

*The share of this project directly relevant for nanotechnology is estimated as being 50 percent.*

## EUROINDIANET

- Title:** Bridging the Gap between Europe and India's Nanotechnology Knowledge Bases towards an Understanding of Innovative Support Structures, Training Programmes and Policies
- Coordinator:** Augusto Medina, Sociedade Portuguesa de Inovação, Portugal
- Partners:**
- Malsch Technovaluation, The Netherlands
  - Indian Institute of Technology, India
  - Indian Institute of Science, India
  - University of Pune, India
  - University of Delhi, India
  - The Institute of Nanotechnology, United Kingdom
- Duration:** 12 months
- Start Date:** 01/04/2006
- End date:** 31/03/2007
- EU funding:** 209,970 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 – INCO-2002-E Multilateral coordination of national RTD policies and activities (INCO Specific measures in support of international co-operation)
- Website:** <http://www.euroindianet.info>

The EuroIndiaNet project aims to promote stronger collaboration between EU and Indian scientists and industrialists in the areas of the nanosciences and nanotechnologies. It provides a comprehensive description of current policies, funding strategies, training programmes and support structures for nanotechnology research and development in both India and the EU; a report and online database describing key infrastructure and organisations in nanotechnology research and development; a message forum where collaborations between Indian and EU scientists can be established and developed; a workshop where key stakeholders will determine routes to establishing stronger collaboration between EU and Indian scientists; a strategy for the development of a cross-border Technology Platform encompassing research, industry and government. This project is relevant for ELSA and governance of nanotechnology because it provides information on nanotechnology in India to European decision makers and diffuses information on nanotechnology infrastructure, organisations and collaborations to Indian stakeholders.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## KNOWLEDGE NBIC

- Title:** Knowledge Politics and New Converging Technologies: A Social Science Perspective
- Coordinator:** Nico Stehr, Zeppelin Universität Friedrichshafen, Germany
- Partners:**
- The Interdisciplinary Centre for Comparative Research in the Social Sciences, Austria
  - University of Warwick, United Kingdom
  - Interdisciplinary Centre for Techn. Analysis and Forecasting, Israel
  - Le Centre Interdisciplinaire de Recherche Comparative en Sciences Sociales, France
  - Foundation for European Scientific Co-operation, Poland
  - Forschungszentrum Karlsruhe, Germany
- Duration:** 36 months
- Start Date:** 01/04/2006
- End date:** 31/03/2009
- EU funding:** 800,000 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 - Citizens-2004-8.3.4 New converging technologies and their wider implications for a European knowledge based Society
- Website:** <http://www.converging-technologies.org>

The KNOWLEDGE NBIC project is a study into the knowledge and anticipated social consequences emerging from the NBIC (Nano, bio, info, cogno = converging technologies) fields, using a social scientific perspective. The project looks into the patterns of NBIC knowledge production as well as the actual and potential use of and social resistance to such knowledge. In terms of knowledge production, it will focus on charting the institutional settings in which the NBIC fields are pursued and promoted. Relevant questions include: Who are the key actors involved? How do they figure in the overall ecology of both academic knowledge and socially relevant technologies? What funding mechanisms are used to promote convergence or synergy among different technological fields? Given the different origins of these fields, when and why did they start to 'converge' and to what extent? With respect to the use of and resistance to this knowledge, the analysis will be concerned in particular with the growing moral, political and economic pressure to regulate, to police or even forbid novel knowledge as well as technical devices emerging from NBIC technologies.

Nanotechnology is not in the focus of this project, but it is an essential element of the converging technologies and therefore covered by these analyses. Questions raised are relevant for ELSA and governance of nanotechnology.

*The share of this project directly relevant for nanotechnology is estimated as being 50 percent.*

## RISKBRIDGE

- Title:** Building Robust, Integrative Interdisciplinary, Governance Models for Emerging and Existing risks
- Coordinator:** Jaap van der Vlies, TNO Delft, the Netherlands
- Partners:**
- University of Edinburgh, United Kingdom
  - Institut Symlog de France, France
  - EC Joint Research Centre, IPSC-Ispra, Italy
  - Dialogik gemeinnützige Gesellschaft für Kommunikations- und Kooperationsforschung, Germany
  - Istituto di Sociologia Internazionale di Gorizia, Italy
- Duration:** 33 months
- Start Date:** 01/07/2006
- End date:** 31/03/2009
- EU funding:** 776,105 Euros
- Instrument:** Coordination Action
- Programme:** FP6 – Society-2005-4.3.1.1 Integrative models in risk governance
- Website:** <http://www.riskbridge.eu>

The RISKBRIDGE project aims to develop an integrative risk governance model connecting risk assessment - management and -communication based on a resilience and discursive approach. The project is structured in three parts. In a preparatory phase the key partners exchange insights on risk governance practice, and transform this into a framework for risk governance learning. In the empirical work phase, six risk fields take centre stage. It concerns: biotechnology/stem cells, radioactive waste, climate change, sediments, electromagnetic fields, and nanotechnology. For each risk field, a learning trajectory is organised, in which three workshops form the focal points. The first workshop focuses on learning about best practices across disciplines and participants within each risk field. The second workshop designs a best science-policy interface for each risk field. Then third workshop compares, analyses and learns across risk fields resulting in an accepted governance model including transdisciplinary lessons and input from scientists and policy makers. In the integration phase the results from the workshops and risk fields will be combined and integrated in a report (book) recommending how to handle complex and emerging risks in the form of a process scheme approach. The results of the project are validated and disseminated in a conference on risk governance.

*The share of this project directly relevant for nanotechnology is estimated as being 20 percent.*

## NANOCAP

- Title:** Nanotechnology Capacity Building NGOs
- Coordinator:** Pieter van Broekhuizen, IVAM UVA, Amsterdam, the Netherlands
- Partners:** - Stichting Natuur en Milieu, the Netherlands; Legambiente Lombardia, Italy; Baltic Environmental Forum, Lithuania; European Environmental Bureau, Belgium; Mediterranean Information Office for Environment, Culture and Sustainable Development, Greece; Federatie Nederlandse Vakbeweging, the Netherlands; Amicus, Ireland; European Trade Union Institute for Research, Education and Health and Safety, Belgium; Kooperationsstelle Hamburg, Germany; ppm research and consulting, Austria; iNANO, Aarhus Universitet, Denmark; Technische Universität Darmstadt, Germany; K.U.Leuven, Belgium; University of Essex, United Kingdom; University of Amsterdam, the Netherlands
- Duration:** 36 months
- Start Date:** 01/09/2006
- End date:** 31/08/2009
- EU funding:** 1,310,000 Euros
- Instrument:** Coordination Action
- Programme:** FP6 – Society-2005-4.3.1.1 Integrative models in risk governance
- Website:** <http://www.nanocap.eu>

NanoCap aims to deepen the understanding of environmental, occupational health and safety risks and ethical aspects of nanotechnology by organising a structured discussion between environmental non-governmental organisations (NGOs), trade unions, academic researchers and other stakeholders in order to enable them to participate in a debate on nanotechnology at European level, to improve their understanding of this new technological field, and to give them the opportunity to formulate their positions within their actual policy context supported by scientific input, to inform their members and the general public and to discuss the issues. In addition, NanoCap aims to develop recommendations to enable public authorities to address the health, safety and environmental risk issues related to the rapid introduction of nanotechnology into society. At the same time it is the goal of this project to give also industry the tools to introduce a “responsible nanotechnology”, i.e. to stimulate industrial and academic R&D performers to focus on source reduction regarding nanoparticles and to make risk assessment an important dimension in their work.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## DEEPEN

<b>Title:</b>	Deepen Ethical Engagement and Participation in Emerging Nanotechnology
<b>Coordinator:</b>	Phil MacNaghten, University of Durham, United Kingdom
<b>Partners:</b>	- Technische Universität Darmstadt, Germany - Centro de Estudos Sociais, Portugal - Universiteit Twente, the Netherlands
<b>Duration:</b>	36 months
<b>Start Date:</b>	01/10/2006
<b>End date:</b>	30/09/2009
<b>EU funding:</b>	894,226 Euros
<b>Instrument:</b>	Specifically Targeted Research Project (STREP)
<b>Programme:</b>	FP6 – Society-2006-4.3.2.3 Deepening the understanding of ethical issues
<b>Website:</b>	<a href="http://www.dur.ac.uk/geography/research/researchprojects/?mode=project&amp;id=241">http://www.dur.ac.uk/geography/research/researchprojects/?mode=project&amp;id=241</a>

The DEEPEN project aims to establish an integrated understanding of the ethical issues posed by emerging nanotechnologies, to develop methodological tools for engaging civil society and the nanoscience community in ethical reflection, and to develop recommendations for incorporating ethical understanding into research practices and governance structures. Emerging nanotechnologies are developing the capacity to enhance human bodily and cognitive capacities. Such capacities have robust economic and social potential yet also raise ethical, social and environmental concerns. DEEPEN aims to integrate understanding of the ethical dilemmas posed by emerging nanotechnologies into the innovation trajectories of the technology itself. Such 'real-time' engagement will take place in five ways. First, we will develop a deepened ethical understanding of issues related to emerging nanotechnologies through an interdisciplinary approach utilising insights from philosophy, ethics, and social sciences. Second, we will develop ways to map de-facto ethics embedded in the world of nanoscience and technology actors, and on that basis develop ways of enhancing ethical reflexivity in the nanoscience and technology world. Third, it will instigate a programme of cross-European empirical research aimed at unravelling the ethical categories of lay people to ethical issues posed by emerging nanotechnologies. Fourth, we will organise new public fora where citizens, stakeholders, experts and decision-makers can develop common understandings of such dilemmas. And fifth, we will develop recommendations for integrating ethical reflection into nanoscience practice and into governance and regulatory processes.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## NANOFORUMEULA

**Title:** Nanoforum EU-Latin America

**Project Manager:** Ineke Malsch, MalschTechnovaluation, Utrecht, The Netherlands

**Partners:**

- Universiteit Twente, the Netherlands (Coordinator)
- CEA - Commissariat à l'Energie Atomique, France
- Fraunhofer-Gesellschaft, Germany
- Universidad Autonoma de Madrid, Spain
- Superintendência da Zona Fraca de Manaus, Brazil
- Instituto Potosino de Investigación Científica y Tecnológica, Mexico

**Duration:** 24 months

**Start Date:** 01/12/2006

**End date:** 30/11/2008

**EU funding:** 500,000 Euros

**Instrument:** Specific Support Action

**Programme:** FP6 – NMP-2005-3.4.5.3 Cooperation with Third Countries in the field of nanotechnology, advanced multi-functional materials and new ways of production research

**Website:** <http://www.nanoforumeula.eu>

NanoforumEULA aims to foster lasting research relations between European research organisations and research organisations in Latin America specialising in nanotechnology. Exchange visits for some twenty Latin American researchers to four European research organisations specialising in nanotechnology are organised. Furthermore, two workshops and subsequent fact-finding missions in Mexico and Brazil to enable European researchers and industrialists to identify opportunities for establishing working relations are organised.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## ETHICSCHOOL

- Title:** Summerschools on Nano Technologies and Converging Technologies
- Coordinator:** Ineke Malsch, MalschTechnoevaluation, Utrecht, The Netherlands
- Partners:**
- Technische Universität Darmstadt, Germany
  - Universiteit Twente Enschede, The Netherlands
  - Radboud Universiteit Nijmegen, The Netherlands
- Duration:** 18 months
- Start Date:** 01/09/2007
- End date:** 28/02/2009
- EU funding:** 168,371 Euros
- Instrument:** Specific Support Action
- Programme:** FP6 –Society-2006-4.3.2.1 Dialogue and information exchange between groups concerned with ethical issues
- Website:** <http://www.ethicsschool.eu>

ETHICSCHOOL organises two summerschools on ethics of emerging technologies. The first summerschool on ethics of nanotechnology focuses on short to medium term developments, related to the research which is actually taking place in nanotechnology research programmes and networks worldwide. The second summerschool on ethics of converging technologies (nanotechnology; biotechnology; information and communication technologies; and cognitive sciences) will focus on longer term more visionary trends and ethical considerations of different combinations of nanotechnology, biotechnology, Information and Communication Technology and cognitive or neurosciences converging on the nanoscale. The presentations, papers and discussions during both summerschools will be used as contents for an e-learning tool which will be made available for use by professors or teachers in their own courses on ethics of science and technology. This way, the project may in the longer term contribute to standardization of applied ethics education worldwide.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## NANOPLAT

- Title:** Development of a Platform for Deliberative Processes on Nanotechnology in the European Consumer Market
- Coordinator:** Eivind Stø, Statens Institutt for Forbruksforskning, Oslo, Norway
- Partners:**
- The University of Manchester, United Kingdom
  - Institut für Ökologische Wirtschaftsforschung, Germany
  - Sabanci Universitesi, Turkey
  - Universitetet i Bergen, Norway
  - Strategic Design Scenarios, Belgium
  - Kozep-Europai Egyetem, Hungary
- Duration:** 18 months
- Start Date:** 01/01/2008
- End date:** 30/06/2009
- EU funding:** 600,602 Euros
- Instrument:** Specific Support Action
- Programme:** FP7- SiS-2007-1.2.3.2-CT - Framing the deliberative process on the responsible development of Nanosciences and Nanotechnologies (NS&T)
- Website:** <http://nanoplat.org>

NANOPLAT aims to develop a platform for deliberative processes on nanoscience and nanotechnology in the European consumer market. Nanotechnology products are now reaching the consumer markets within a large number of branches. The project will concentrate on deliberative processes concerning human and environmental safety, ethical and moral dilemmas, and perceptions of risks and responsibilities as revealed through a focus on the market interfaces across the value chain of consumer goods. Consumers, citizens and their organisations could be the most important stakeholders in the diffusion process of nano-products in Europe and beyond. The main goal is to evaluate and stimulate the deliberate dialogue, and give scientific support to the stakeholders responsible for this dialogue. The project will evaluate selected deliberative processes in Europe, both at the EU and national level. These evaluations will have a general NS&T perspective, with special focus on consumption. It will identify the needs and interest of relevant stakeholders along this value chain, especially focusing on producers, consumers, NGOs and the civil society. The project will develop a deliberative and science based platform for a stakeholder dialogue in Europe and beyond in this area.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## OBSERVATORY-NANO

- Title:** European observatory for science-based and economic expert analysis of nanotechnologies, cognisant of barriers and risks, to engage with relevant stakeholders regarding benefits and opportunities
- Coordinator:** Mark Morrison, Institute of Nanotechnology, United Kingdom
- Partners:** - VDI Technologiezentrum, triple innova, Technical University of Darmstadt, Nano and Micro Technology Consulting, all Germany; Commissariat à l'énergie atomique, France; Institute of Occupational Medicine, UK; Malsch TechnoValuation, National Institute for Public Health and the Environment (RIVM), MERIT - Universiteit Maastricht, all the Netherlands; Spinverse, Finland; Bax & Willems Consulting Venturing, Spain; AIRI/Nanotec IT, Italy; Eidgenössische Materialprüfungs- und Forschungsanstalt, Switzerland; Nanoethics Centre, Aarhus, Denmark; Technology Centre AS, Czech Republic
- Duration:** 48 months
- Start Date:** 01/04/2008
- End date:** 31/03/2012
- EU funding:** 3,999,837 Euros
- Instrument:** Specific Support Action
- Programme:** FP7 - NMP-2007-1.1-4 Development of methodology, collection and elaboration of scientific-technical and socio-economic data and studies on nanosciences and nanotechnologies, including risk assessment, and establishment of an observatory
- Website:** [www.observatory-nano.eu](http://www.observatory-nano.eu)

The observatoryNANO project aims to create a European observatory on Nanotechnologies to present reliable, complete and responsible science-based and economic expert analysis, across technology sectors, establish dialogue with decision makers and others regarding the benefits and opportunities, balanced against barriers and risks, and allow them to take action to ensure that scientific and technological developments are realized as socio-economic benefits. A dynamic website will inform users through reports and analysis on nanotechnology developments.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## FRAMINGNANO

- Title:** International multi-stakeholder dialogue platform framing the responsible development of Nanosciences and Nanotechnologies (NS&T)
- Coordinator:** Elvio Mantovani, Associazione Italiana per la Ricerca Industriale AIRI / Nanotec, Italy
- Partners:**
- The Innovation Society, Switzerland
  - Institute of Nanotechnology, United Kingdom
  - National Institute for Public Health and the Environment (RIVM), The Netherlands
  - Fondation Euractiv, Belgium
  - Technologické Centrum, Czech Republic
- Duration:** 23 months
- Start Date:** 01/05/2008
- End date:** 31/05/2010
- EU funding:** 675,044 Euros
- Instrument:** Specific Support Action
- Programme:** FP7 - SiS-2007-1.2.3.2-CT - Framing the deliberative process on the responsible development of Nanosciences and Nanotechnologies (NS&T)
- Website:** <http://www.framingnano.eu>

The FramingNano project will support the establishment of a multistakeholders dialogue on nanosciences and nanotechnologies regulation and governance among the scientific, institutional, industrial communities, the broad public to articulate consensus and absence of consensus between the various stakeholders, sustain a European debate between them, and foster the development of a shared frame of knowledge, objectives, actions to define constructive and practicable regulatory solutions toward a responsible development of nanosciences and nanotechnologies. This action will lead to a proposal of a Governance Plan designing a deliberative process for the responsible development of nanosciences and nanotechnologies at European level and beyond, including recommendations for future research, policy actions, and co-operative research processes over the years 2009-2013.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## ICPCNANONET

- Title:** A web-based repository of nanoscience and nanotechnology publications, database of researchers and online forum, to inform and facilitate networking between EU and ICPC RTD
- Coordinator:** Mark Morrison, Institute of Nanotechnology, United Kingdom
- Partners:**
- Sociedade Portuguesa de Inovação, Portugal
  - St Petersburg Electrotechnical University, Russia
  - Jawaharlal Nehru Centre for Advanced Scientific Research, India
  - Chinese Society of Micro-Nano Technology, China
  - MERIT - Universiteit Maastricht, The Netherlands
  - Malsch TechnoValuation, The Netherlands
- Duration:** 48 months
- Start Date:** 01/06/2008
- End date:** 31/05/2012
- EU funding:** 1,355,000 Euros
- Instrument:** Specific Support Action
- Programme:** FP7 - NMP-2007-1.1-3 Support to networking ICPC researchers in nanotechnology and creation of a free and open electronic archive of nanosciences and nanotechnologies scientific and technical publications
- Websites:** <http://www.icpcnanonet.org> and <http://www.nanoarchive.org>

ICPCNanoNet aims to develop an electronic archive of nanoscience and nanotechnology publications derived from publishers and open access repositories, and by encouraging researchers to deposit their own peer-reviewed publications; provide regular information on research expertise, capacities and initiatives in different world regions; and network nanotechnology researchers in different global regions through a combination of online facilities and physical workshops, with the purpose of promoting collaborative research.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*

## NANOMED ROUND TABLE

<b>Title:</b>	Nanomedicine ethical, regulatory, social and economic environment
<b>Coordinator:</b>	David Bennett, Delft University of Technology
<b>Partners:</b>	<ul style="list-style-type: none"><li>- Genetic Interest Group, United Kingdom;</li><li>- Technische Universität Darmstadt , Germany</li><li>- Commissariat a l'Energie Atomique, France</li><li>- Deutsches Museum München, Germany</li><li>- Gesellschaft für Bioanalytik-Münster, Germany</li><li>- Biomedical Consultants, The Netherlands</li><li>- Symbiotic Consultancy, United Kingdom</li><li>- Mark F. Cantley, United Kingdom</li><li>- Hayhurst Media, United Kingdom</li></ul>
<b>Duration:</b>	12 months
<b>Start Date:</b>	01/01/2009
<b>End date:</b>	31/12/2009
<b>EU funding:</b>	687,138 Euros
<b>Instrument:</b>	Specific Support Action
<b>Programme:</b>	NMP-2007-1.2-3 Analysis of the ethical, regulatory, social and economic environment of nanomedicine
<b>Website:</b>	not yet operational

Although very promising, nanomedicine may add new dimensions to many ethical, social and economic issues. For the promises to be realised to achieve the maximum benefit of nanomedical innovations for everyone the way has to be paved for a safe, integrated and responsible approach to nanomedicine. This will also be a necessary condition for the sustainable competitiveness of nanomedical research and development in Europe, and for its healthcare industry. It is therefore of primary importance to understand its possible impacts and consequences in advance and to provide for all stakeholders a well-organised forum to express their needs and requirements, in particular for patients and society.

The main purpose of the Nanomed Round Table project is to provide to European stakeholders a set of recommendations to support decision making regarding nanomedical innovations. These recommendations will be based on a thorough analysis of existing documents, multi-stakeholder debate, and construction of scenarios on the possible consequences and impacts of nanomedicine.

*The share of this project directly relevant for nanotechnology is estimated as being 100 percent.*



## Annex II: Other activities on European level

### Information material on nanotechnology

#### Brochure: Nanotechnology – Innovation for Tomorrow's World

This brochure of the European Commission aims to illustrate to the public what nanotechnology is. It has been first published in May 2004 and originates from a project funded by the German Federal Ministry for Education and Research (BMBF) and that was carried out by the German Association of Engineers - Technology Centre (VDI-TZ). At the time-being, this brochure is available as pdf in Danish, German, English, Greek, Spanish, French, Italian, Dutch, Polish, Portuguese, Slovenian, Finnish, Swedish, Arab, Chinese, Russian, Czech, Slovak and in Estonian. It can be downloaded on [http://cordis.europa.eu/nanotechnology/src/pe\\_leaflets\\_brochures.htm](http://cordis.europa.eu/nanotechnology/src/pe_leaflets_brochures.htm)

#### DVD: Nano: the next dimension

This 28' documentary film (DVD format - only in English language) on nanotechnology won a prize in the category "Scientific and popular scientific film under 30 minutes" and the prize of the Czech Television for the best foreign TV programme at the festival TECHFILM 2003, Czech Republic. It has also won the "Grand Prix du Jury" at the "Festival du Film Scientifique d'Orsay", 30 March to 2 April 2004. It can be ordered via [http://cordis.europa.eu/nanotechnology/src/pe\\_leaflets\\_brochures.htm](http://cordis.europa.eu/nanotechnology/src/pe_leaflets_brochures.htm) and downloaded on [http://ec.europa.eu/avservices/video/video\\_prod\\_en.cfm?type=detail&prodid=305](http://ec.europa.eu/avservices/video/video_prod_en.cfm?type=detail&prodid=305).

#### DVD: Nanotechnology

This 26' movie (DVD format in 20 EU languages) on nanotechnology, aimed particularly at a young audience, seeks to both inform and raise interest in nanotechnology and research. It received a Prize from the Czech Ministry of Education, Youth and Physical Training in the category "film dealing with education" at the Festival: TECHFILM 2003, Czech Republic and a Diploma of honour in the 33rd edition of the Roshd International Film Festival in Iran. It can be ordered via [http://cordis.europa.eu/nanotechnology/src/pe\\_leaflets\\_brochures.htm](http://cordis.europa.eu/nanotechnology/src/pe_leaflets_brochures.htm) and downloaded on [http://ec.europa.eu/avservices/video/video\\_prod\\_en.cfm?type=detail&prodid=449](http://ec.europa.eu/avservices/video/video_prod_en.cfm?type=detail&prodid=449).

#### DVD: NanoInLife

This 26' movie (DVD format in 23 EU languages) on nanotechnology will be published by end of 2008. It tells the story of Alice, a smart 13-years old girl, who is discovering the usefulness of nanotechnology-based products in our today's daily life. Sir Harold Kroto, 1996's Nobel Prize winner in chemistry, is introducing nanosciences and nanotechnology to Alice, whereas different experts present various examples where nanotechnology is significantly helping to improve our quality of life either by upgrading existing products or by allowing, new high-added value products to show up. The film will be distributed freely via the website <http://cordis.europa.eu/nanotechnology>.

## Communication and outreach

### Workshop: "Talking nano"

The workshop had been organised in the frame of the Communicating European Research (CER) conference which took place in November 2005. The workshop set out to explore the challenges of communicating nanoscience to the general public. It examined its novelty, its ethical, legal and social aspects, and the similarities and differences between the debate on nanotechnology and those surrounding other new technologies such as GMOs. Three EU funded projects in the field, Nanologue, NanoDialogue and NanobioRaise (see Annex I of this report) presented their results on these topics. For more information on the CER and downloads of the proceedings including the workshop 'talking nano' see: <http://ec.europa.eu/research/conferences/2005/cer2005>. For more information on the workshop, see [http://ec.europa.eu/research/industrial\\_technologies/articles/article\\_3328\\_en.html](http://ec.europa.eu/research/industrial_technologies/articles/article_3328_en.html).

### Report: Communicating science – A scientist's survival kit

This report has been published by the European Commission in 2006 (author: Giovanni Carrada). The original publication in Italian language has been supported by Italy's National Permanent Conference of Deans from the Faculties of Science and Technology. The 'survival kit' aims to improve skills and practice of scientists and researchers in interfacing with the media, elaborating and presenting information in a way that non initiated persons can easily and rapidly understand. Nanotechnology is mentioned as an example illustrating the particular problems scientists encounter when talking with the public. The report can be downloaded from [http://ec.europa.eu/research/science-society/pdf/communicating-science\\_en.pdf](http://ec.europa.eu/research/science-society/pdf/communicating-science_en.pdf).

### Workshop report: Communication Outreach in Nanotechnology

The report results from two international workshops organised by the European Commission in February and October 2007 with the participation of international experts from the fields of communication, outreach and nanotechnology. The main programme of the workshops consisted of an introductory lecture, group discussions based on an open space methodology and a final plenary session. Between the two workshops an open web consultation had been carried out. This exercise aimed at identifying appropriate messages and vehicles, techniques and outcomes to be set up to attain citizens who are not properly informed on nanotechnology, especially tough-to-reach audiences. The report outlines an assessment of current communication and insight of desirable outcomes, and explores appropriate participatory mechanisms promoting dialogue with the broad civil society, which are specific to nanotechnology. It was aimed at assessing current communication experiences and outlining insight of desirable outcomes. This allows identifying the most appropriate participatory mechanisms promoting a balanced dialogue with the broad civil society. As a result, recommendations emerge also for specific actions to be examined under FP7. The report can be downloaded from [ftp://ftp.cordis.europa.eu/pub/nanotechnology/docs/nanooutreach\\_action\\_final\\_mar\\_08.doc](ftp://ftp.cordis.europa.eu/pub/nanotechnology/docs/nanooutreach_action_final_mar_08.doc).

## Ethical issues

### **Opinion of the European Group of Ethics: Ethical aspects of Nanomedicine**

The European Group of Ethics EGE is an independent, multidisciplinary and pluralist advisory group which advises the European Commission on how ethical values should be taken into consideration in the preparation and implementation of Community legislation or policies. Following a request from the Commission's president Barroso in November 2005 it addressed ethical aspects of nanomedicine. The EGE received inputs from a number of hearings with experts in the field, decision makers and relevant stakeholders, as well as a public round table. The opinion took position on aspects such as safety of nanoproducts, public engagement, technology assessment, ethical and legal implications and had been published in January 2007. The opinion can be downloaded from [http://ec.europa.eu/european\\_group\\_ethics/activities/docs/opinion\\_21\\_nano\\_en.pdf](http://ec.europa.eu/european_group_ethics/activities/docs/opinion_21_nano_en.pdf).

### **Working document: From the Ethics of Technology towards an Ethics of Knowledge Policy & Knowledge Assessment**

This working document of the European Commission Services (author: René von Schomberg) has been published January 2007 and it identifies different ethical aspects of nanotechnology and uses them as examples to describe different levels of deliberative procedures which allow for comprehensive, democratic decision making. The working document can be downloaded from [http://ec.europa.eu/research/science-society/pdf/ethicsofknowledgepolicy\\_en.pdf](http://ec.europa.eu/research/science-society/pdf/ethicsofknowledgepolicy_en.pdf).

## Governance

### **Commission Communications: European strategy for nanotechnology and the Action Plan on nanotechnology**

On the 12th May 2004, the European Commission adopted the Communication "Towards a European Strategy for Nanotechnology" COM(2004) 338. It sought to bring the discussion on nanoscience and nanotechnology to an institutional level and proposes an integrated and responsible strategy for Europe. On the 7th June 2005, the European Commission adopted the Action Plan "Nanosciences and nanotechnologies: An action plan for Europe 2005-2009" (COM(2005) 243). This Action Plan defines a series of articulated and interconnected actions for the immediate implementation of a safe, integrated and responsible strategy for nanosciences and nanotechnologies, based on the priority areas identified in the above-mentioned Communication. On 6 September 2007, the European Commission adopted the Communication "Nanosciences and Nanotechnologies: an action plan for Europe 2005-2009. First Implementation Report 2005-2007". This reports progress in virtually all areas of the Action Plan. For more information and for downloads, see <http://cordis.europa.eu/nanotechnology/actionplan.htm>.

## **Report: Third International Dialogue on Responsible Research and Development of Nanotechnology.**

The third international dialogue meeting took place in March 2008. The international dialogue has been initiated in order to establish a framework of world wide shared principles for the safe, sustainable, responsible and socially acceptable development and use of nanotechnologies. The final aim of this dialogue is to facilitate good governance in nanotechnology, aiming at a development of nanotechnology that corresponds to the needs of society as a whole. In this respect this dialogue wants to be inclusive, involving all countries and stakeholders interested in the responsible and sustainable development of nanotechnology. The report can be downloaded from [ftp://ftp.cordis.europa.eu/pub/nanotechnology/docs/report\\_3006.pdf](ftp://ftp.cordis.europa.eu/pub/nanotechnology/docs/report_3006.pdf).

## **Commission Recommendation on a code of conduct for responsible nanosciences and nanotechnologies research**

This Recommendation of 7 February 2008 includes the Code of Conduct, aiming to promote integrated, safe and responsible nanosciences and nanotechnologies research in Europe for the benefit of society as a whole. The general principles and guidelines on actions to be taken outlined benefited from a public consultation. The Recommendation provides Member States with an instrument to undertake further initiatives to ensure safe, ethical and sustainable nanotechnology research in the European Union and to contribute to proper coordination between Member States with a view to optimise synergies between nanotechnology research stakeholders at European and international levels. The Recommendation can be downloaded from [http://ec.europa.eu/nanotechnology/pdf/nanocode-rec\\_pe0894c\\_en.pdf](http://ec.europa.eu/nanotechnology/pdf/nanocode-rec_pe0894c_en.pdf).

## **Websites**

### **Website (CORDIS): Nanotechnology research at the European Commission**

This CORDIS nanotechnology research portal offers website access to funding opportunities and EU funded research projects, information on research related international co-operation, financing and innovation, education and mobility, health, environment and safety aspects, and communication and debate. The site also includes publications and events in nanotechnology research, the latest nano-related news, and press material on nanotechnology in general and on specific funded projects. It also presents information on the European Strategy and the Action Plan on nanotechnology. See <http://cordis.europa.eu/nanotechnology> .

### **Website: Nanotechnology at the European Commission**

Website portal of the European Commission on European policies related to nanotechnology. This includes an overview on the key policy areas in nanotechnology, links to expert groups and Commission services dealing with nanotechnology and information on recent policy actions on nanotechnology on European Commission level. See <http://ec.europa.eu/nanotechnology> .