



EUROPEAN PARLIAMENT

*Science and Technology Options
Assessment*

STOA

STOA

Annual Report 2009

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Foreword

The world is increasingly driven by scientific progress. We enjoy the benefits of science and technology in every aspect of our lives, as we work, travel, eat, communicate and relax. But as science continues to move further and faster, there is a growing need for legislators and policy-makers to rely on independent, impartial and accessible information about developments in science and technology (S&T), the opportunities they offer, but also the risks they entail and their ethical implications.

The launch of STOA (Science and Technology Options Assessment), in 1987, was the European Parliament's response to this need.

STOA has come a long way since then. Initially set up as an 18-month pilot project, with time, STOA has followed an evolution reflecting that of the European Union and its Parliament and, in a more general context, that of Science and Technology in the modern society. In the course of this evolution, STOA consolidated its role and became firmly rooted in the European Parliament's structure as a reference point for S&T advice and technology assessment.

The new STOA Panel that I have the honour to chair, while building on STOA's actions and initiatives of the past years, has indicated the priority objectives to be pursued in the years to come. Among these, the intensification of the interaction between STOA and the Parliament's Committees, which has already proved to be mutually beneficial in the past, and the enhancement of STOA's visibility, a vital aspect for the accomplishment of STOA's mission, which requires active knowledge-sharing with MEPs, the scientific community and the society at large. For both of these objectives, targeted initiatives have already been set in motion.

While pursuing these objectives, STOA will continue to strive for the highest quality possible as regards the sound science underpinning its products and activities, and the effective and timely communication of their relevance to Parliament's work.

Finally, I would like to express my sincere thanks to Philippe Busquin, STOA Chairman for the last five years, who has profoundly contributed to raising the prestige of STOA in Europe and in the world. I am particularly happy to cooperate, within the STOA Bureau, with STOA Vice-Chairmen António Fernando Correia De Campos and Malcolm Harbour, and Vice-President Silvana Koch-Mehrin, whose commitment and determination will crucially help me ensure the fulfilment of STOA's ambitions for the 7th legislative

Paul Rübzig
STOA Chairman

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Executive Summary

The year 2009 witnessed a long series of STOA activities, despite the break due to the transition from the 6th to the 7th legislature. This Annual Report covers the period from 1 January to 31 December 2009.

Chapter 1 outlines the remit of STOA's work and gives an overview of STOA's main lines of action. It also provides details on the outcome of the procurement process for the new STOA multi-annual framework contract and on the assessment of STOA's activities in the 6th legislature, combined with the latest modification of the STOA Rules.

Chapter 2 presents the newly constituted first STOA Panel of the 7th legislature.

Chapter 3 provides the basic information on the content and scope of the STOA projects with reference to the projects completed in 2009 (Chapter 3.1) and the projects which were ongoing at the end of 2009 (Chapter 3.2).

Chapter 4 is focussed on the STOA Annual lecture which in 2009 hosted, as keynote speaker, Sir Tim Berners-Lee, inventor of the World Wide Web.

Chapter 5 provides details about the workshops and conferences organised by STOA alone or in collaboration with external partners.

Chapter 6 addresses other activities and initiatives organised by or involving STOA.

Chapter 7 provides details concerning the utilisation of STOA budget in 2009.

1. Constituent meeting of the STOA Panel

The constituent meeting of the first STOA Panel of the 7th legislature took place on 12 November 2009.

In the same meeting, the newly constituted Panel, elected:

- Mr. Paul Rübig, as STOA Chairman,
- Mr António Fernando Correia de Campos, as first STOA Vice-Chairman,
- Mr. Malcom Harbour, as second STOA Vice-Chairman

STOA Panel members at the end of 2009					
	Panel Member	Committee		Panel Member	Committee
	Paul RÜBIG (EPP, AT) Chairman STOA Bureau member	ITRE		Giovanni LA VIA (EPP, IT)	AGRI
	Silvana KOCH-MEHRIN (ALDE, DE) STOA Bureau member	EP Vice- President		Ria OOMEN RUIJTEN (EPP, NL)	EMPL
	Antonio F. CORREIA DE CAMPOS (S&D, PT) 1st Vice-Chairman STOA Bureau	IMCO		Vittorio PRODI (S&D, IT)	ENVI
	Malcolm HARBOUR (ECR, UK) 2nd Vice-Chairman STOA Bureau member	IMCO		Teresa RIERA MADURELL (S&D, ES)	ITRE
	Reinhard BÜTIKOFER (Greens/EFA, DE)	ITRE		Csaba Sándor TABAJDI (S&D, HU)	AGRI
	Françoise CASTEX (S&D, FR)	EMPL		Salvatore TATARELLA (EPP, IT)	ENVI
	Jorgo CHATZIMARKAKIS (ALDE, DE)	ITRE		Silvia Adriana TICAU (S&D, RO)	TRAN
	Dieter-Lebrecht KOCH (EPP, DE)	TRAN	AGRI: Agriculture and Rural Development EMPL: Employment and Social Affairs ENVI: Environment, Public Health and Food Safety IMCO: Internal Market and Consumer Protection ITRE: Industry, Research and Energy TRAN: Transport and Tourism		

2. STOA in 2009

In 2009, notwithstanding the interregnum of almost six months between the STOA Panels of the 6th and 7th legislatures, STOA has further consolidated its role as a reference point for Science and Technology (S&T) advice within the European Parliament (EP).

The main components of STOA's mission:

- *to provide independent, high-quality and scientifically impartial studies for the assessment of the impact of new technologies and identify the options for the best courses of action to take,*
- *to promote the dialogue on science and technology issues between the political and scientific communities and society as a whole,*
- *to support and coordinate initiatives to strengthen parliamentary technology assessment activities in the Member States of the European Union,*

have been fulfilled with generally recognised success through:

- ✓ Projects ranging over several S&T areas and executed by eminent scientific institutions, which have provided the MEPs and the parliamentary committees with insights on medium- to long-term, complex interdisciplinary issues related to the impact of S&T developments on society.

Several projects, in the fields of ICT, sustainable energy sources, human enhancement and technology transfer were concluded and published in 2009.

In the same year, several projects were launched covering topics such as: Nanosafety, Technology options for urban transport, Technology Assessment across borders, Knowledge transfer from Public Research Organisations, Bio-engineering in the 21st century: Making perfect life.

- ✓ Conferences, seminars and workshops organised by STOA, alone or in collaboration with external organisations, fostering a closer interaction between policy-makers, scientists and society in its multi-faceted components. Among these, the Annual Lecture, the pinnacle STOA annual event, which in 2009 hosted Sir Tim Berners-Lee, the inventor of the World Wide Web.
- ✓ The participation of STOA, beyond the premises of the EP, in key events at the European and global level, such as the EuroScience Open Forum (ESOF) and the Science and Technology in Society (STS) *forum*.
- ✓ The very active role STOA has continued to play within the European Parliamentary Technology Assessment (EPTA) network, contributing to the development of Parliamentary Technology Assessment (PTA) as part of a democratic governance culture.

In 2009, the Vice-President responsible for STOA, submitted to the EP Bureau – as required by the STOA Rules – a report about the STOA activities in the 6th parliamentary term. The Vice-President's report confirmed the soundness of STOA's action, encouraging the adoption of new initiatives for consolidating the role and the visibility of STOA within the EP.

In 2009, the STOA Rules were also modified, based on a proposal submitted by the Vice-President responsible for STOA at the same time as the above report. The main purpose of these modifications¹, which are a further step of an ongoing reform process begun in 2003, was to add a European dimension to STOA's mission and include an additional criterion for selecting STOA projects in alignment with the priorities defined by the STOA Panel, as well as to simplify certain administrative procedures.

The year 2009 saw the conclusion of the procurement process for the new STOA multi-annual framework contract, with the signing of contracts with the following institutes according to the difference thematic lots:

Lot	Contractor(s)
1 – Energy	1. ISIS, Via Flaminia, 21, I-00196 Rome, Italy 2. KIT, Hermann-von-Helmholtz-Platz 1, D-76344 Eggenstein - Leopoldshafen, Germany
2 – Transport	1. KIT 2. Consultrans, Serrano 6, 2nd floor, E-28001 Madrid, Spain.
3 – Environment (including Climate Change)	1. IEEP, 15 Queen Anne's Gate, London SW1H 9BU, United Kingdom (UK) 2. KIT
4 – ICT and Information Society	KIT
5 – Nanoscale science and technology (including industrial applications)	1. KIT 2. IVAM UvA BV, P.O. Box 18180, 1001 ZB Amsterdam, The Netherlands
6 – Life-sciences and human well-being	KIT
7 – Agriculture, food and biotechnology	KIT
8 – Science Technology and Innovation Policy	1. Technopolis, 3 Pavilion Buildings, Brighton, BN1 1EE, UK 2. KIT

KIT - Karlsruhe Institute of Technology

IEEP - Institute for European Environmental Policy

ISIS - Institute of Studies for the Integration of Systems

IVAM UvA - Interfaculty Environmental Science Department of the University of Amsterdam

¹ **Most important changes introduced to the STOA Rules in 2009:**

STOA [shall] support and coordinate initiatives to strengthen parliamentary technology assessment activities in the Member States of the European Union, including creating or enhancing parliamentary technology assessment capacities in European countries, especially new Member States.

Contracts of STOA with external suppliers of scientific services may stipulate that a fraction of the contractual price not exceeding 15% shall be dedicated to awareness-raising and visibility-enhancing campaigns for the project in question.

Among the criteria of approval of STOA project proposals now figures also “the strategic importance of the proposal and its alignment with priorities defined by the STOA Panel”.

3. STOA Projects

3.1. Projects completed in 2009

- **Animal-based Welfare Monitoring**

Supervisor: Jorgo Chatzimarkakis

Project duration: August 2007 - March 2009

Workshop: 28 January 2009

Animal welfare is a pressing public concern in the European Union (EU). At present, the animal welfare status on-farm is usually inferred from external parameters, such as cage size or feeder space. This approach has serious limitations, because the relation between such design parameters and animal welfare is not clear. Current research offers the possibility of assessing the welfare of animals more directly, in terms of their condition, health, performance and behaviour. This animal-based approach, although still in progress, is very promising.

The project investigates the potential for introducing a European system of on-farm assessment of animal welfare using animal-based indicators. Part 1 of the project describes the scientific and technological state-of-the-art with regard to animal-based welfare indicators and monitoring technology. Part 2 studies the socio-economic impact of introducing an animal-based welfare monitoring system on livestock production in EU Member States.

Structured around the four Welfare Quality principles of good feeding, good housing, good health and appropriate behaviour, are 12 criteria, each covering a separate aspect of welfare with animal-based indicators for each type of animal. The conclusion is that standardised on-farm animal-based assessment is becoming technically feasible.

The report also considers whether animal-based parameters could be used to establish a more humane way of killing animals during disease control, but concludes that further research is needed to establish the validity, reliability and feasibility of protocols designed for specific situations.

Questions addressed in the workshop, chaired by the project supervisor, included:

- Is a system of animal-based monitoring of animal welfare technologically feasible?
- Is it possible to translate animal-based welfare indicators into overall welfare levels and corresponding market labels, in order to accommodate public concerns regarding animal welfare?
- What economic costs and gains are involved in implementing an animal-based monitoring system in the European animal husbandry?
- What policy issues do arise? Is a Europe-wide legal minimum with regard to animal welfare advisable?

- **Implications of Global Trends in Eating Habits for Climate Change, Health and Natural Resources**

Supervisors: Jorgo Chatzimarkakis, Lilly Jacobs

Project duration: January 2009 - April 2009

Workshop: 30 March 2009, EP, Brussels

Currently there are considerable differences between developed and developing world consumption patterns. Most notably, with an annual per capita consumption of 80 kg, an average developed-world citizen consumes 2.5 times as much meat as a developing-world citizen. Based on nutritional requirements, the scientific consensus strongly indicates that the developed world appears to be over-consuming meat products. Current trends indicate that developing countries are slowly adopting western consumption patterns. The increased demand for meat will potentially place a great strain on the environment, due to the fact that the production of animal-derived food generally requires more resources than that of plant-derived food. A more plant-based diet is therefore more environmentally friendly than a diet heavy in animal-derived products. Moreover, the overconsumption of meat products is associated with negative health effects (e.g. increased risk of heart disease, cancer, diabetes and obesity) and associated public health and other costs.

The study outlines the contribution of livestock production to climate change and health risks associated with high meat consumption. The natural resources required to produce animal-based and plant-based protein are contrasted and diets with different levels of the two types of protein compared. Using world population projections, three scenarios based on different consumption patterns are created to show possible requirements and greenhouse gas (GHG) emissions for animal and plant protein production: a 'minimal' scenario (consumption of animal protein only via milk and eggs), an 'optimal' scenario (diets with a low meat intake) and a 'maximum' (baseline) scenario (current level of meat consumption extended to developing countries).

The results from the model used suggest that, if western consumption patterns were to spread, global meat demand could more than double from 251 million tonnes in 2005 to 563 million tonnes by 2050. Assuming production methods and yield trends remain stable and the stock of sustainable agricultural land available remains constant, production of this quantity of meat would require 33% of global arable land for feed production, 58% of the world's surface as pastureland and the equivalent of up to 18% of 2050 oil production. GHG emissions from meat production would more than double. Furthermore, an increase in the occurrence of cancer and cardiovascular disease and the health costs associated with these conditions would also be expected.

The workshop, chaired by the project supervisors, outlined the impact of intensive livestock production on climate change and the health risks associated with diets high in meat consumption. Comments were made on alternative sources for animal protein (e.g. aquaculture, algae, *in-vitro* meat) and policy options are suggested in order to decrease livestock emissions and create incentives for the adoption of healthier diets.

Conrad Caspari, Managing Director of Agra CEAS, outlined the issue of consumption patterns. The environmental effects of food and livestock production were covered by Tara Garnett, from the Food Climate Research Network (FCRN) / University of Surrey. The health effects of different dietary patterns and estimations of the effects of different consumption patterns (the quantitative part of the project) were addressed by Maria Christodoulou, Director of the Brussels Agra CEAS Office, and John Nganga, also from Agra CEAS, who further outlined policy options and possible solutions.

- **Human Enhancement**

Supervisor: Ria Oomen Ruijten

Project duration: February 2008 - March 2009

Workshop: 24 February 2009, EP, Brussels

‘Human enhancement’ (HE) refers to a wide range of existing, emerging and visionary technologies, including pharmaceutical products, neuroimplants, human germline engineering, brain stimulation technologies, gene doping in sports, cosmetic surgery, growth hormones, anti-ageing medication, and prosthetic applications.

Defining HE as any “modification aimed at improving individual human performance and brought about by science-based or technology-based interventions in the human body”, this study distinguishes between (i) restorative or preventive, non-enhancing interventions, (ii) therapeutic enhancements, and (iii) non-therapeutic enhancements. Furthermore, faced with the often highly visionary and strongly ideological character of the debate on HE, the study attempts to bridge the gap between, on the one hand, the visions and their cultural and ideological aspects, and, on the other hand, the techno-scientific developments in question and their social aspects and implications.

The study discusses possible strategies of how to deal with HE in a European context, rejecting a total ban and a *laissez-faire* approach as inappropriate, and identifying a *reasoned pro-enhancement approach*, a *reasoned restrictive approach*, and a *systematic case-by-case approach* as viable options for the EU. The study holds that the EU positioning with regard to HE needs to be based on a normative framework, which does not yet exist. It therefore proposes setting up a European body (temporary committee or working group) that will guide the formulation of EU policies on HE.

The workshop was attended by several MEPs (Dorette Corbey, Jorgo Chatzimarkakis, Malcolm Harbour, Philippe Busquin, Marco Cappato and Paul Rübzig) and experts from various countries. The first session (working lunch), was opened by Martijntje Smits (Rathenau Institute, NL and project leader), who explained what HE is and why this trend is urgently in need of regulation. Subsequent speakers defended a moderate pro-enhancement approach (Andy Miah, University of West Scotland, UK), a reasoned restrictive approach (Roberto Mordacci, Università Vita-Salute San Raffaele, IT) and a systematic case-by-case approach (Tsjalling Swierstra, Universiteit Twente, NL). In the second session (debate), participants acknowledged the importance of HE regulation and the need for citizens' participation. They agreed that, if the EU combines the powers of politicians, experts and citizens in a working group, the use and effects of HE technologies can at least be anticipated in time.

- **Assessing the Potential of ICT to Increase Energy Efficiency and Fight Climate Change – Key Technologies and Prospects**

Supervisor: Paul Rübzig

Project duration: August 2008 - April 2009

Workshop/Meeting with CLIM Committee: 15 January 2009, EP, Strasbourg

In order to combat climate change, the EU has set a target of a 20% reduction in CO₂ emissions by 2020. This target only seems achievable if a reduction in energy consumption supported by energy efficient technologies takes place. In principle, many innovative technologies are strongly linked with ICT applications.



The project aimed at assessing the net ICT impact on energy efficiency/GHG emissions on the basis of data available in the literature and in technical documents. Technical potentials for improving this net impact are discussed in a systematic way. The main focus is on energy efficiency and energy consumption.

The final study illustrates that ICT is a crucial enabling technology for the mitigation of

climate change. Various ICT applications in different sectors enable energy savings, increased energy efficiency and a reduction of GHG emissions. In four selected areas, the relevance of ICT for emissions reduction was elaborated in detail: Electricity distribution grids (smart grids); smart buildings, smart homes and smart metering; transport and dematerialisation; industrial processes and organisational sustainability. The net effect of ICT on climate change is found to be clearly positive.

- **Agricultural Technologies for Developing Countries**

Supervisors: Esther De Lange, Lily Jacobs, Anders Wijkman

Project duration: July 2008 - April 2009

Around half of the world's population is living in rural areas, with agriculture being the centre of their lives. The vast majority of farmers in developing countries (85%) are small-scale farmers, producing on less than 2 hectares. Furthermore, most of the poor in developing countries (75%) live in rural areas. Climate change will disproportionately affect developing countries and the poor, calling for adaptation of agricultural production systems. Increasing production and strong economic growth in agriculture – with small-scale farmers in the centre of attention – are urgently needed for achieving poverty reduction and other Millennium Development Goals. The study investigated the contribution of selected important agricultural production systems (including rainwater harvesting, conservation agriculture, rice intensification system, organic farming, agroforestry systems and transgenic plants) to higher food production and food security with focus on small-scale farmers. These activities demand the development of new technological solutions, the making operational (and economically viable) of existing technologies and the local adaptation, particularly in smallholder systems. The study concludes that a close interaction between farmers and researchers is needed. On the basis of its findings, the study suggests options for action within European development policies and development cooperation.

The study includes six annexes, case studying different aspects of the subject:

- Annex 1: Case Study 'Rainwater harvesting'
- Annex 2: Case Study 'Conservation agriculture'
- Annex 3: Case Study 'The system of rice intensification'
- Annex 4: Case Study 'Organic farming'
- Annex 5: Case Study 'Agroforestry systems'
- Annex 6: Case Study 'Transgenic crops'

• Current Policy Issues in the Governance of the European Patent System

Supervisor: Philippe Busquin

Project duration: January 2009 - October 2009

Conference: 17 March 2009, EP, Brussels

In 2007 STOA published a study entitled '*Policy options for the improvement of the European patent system*'. In this, a cross-disciplinary working group examined potential changes to the patent system. Issues studied were: balancing society/inventor benefits; remuneration-based patenting; rights protection systems and transparency.

The study was presented in specific workshops within the EP, as well as through dedicated presentations to the JURI (Legal Affairs) and IMCO (Internal Market and Consumer Protection) Committees. Building on the experience of this project, STOA decided to commission a follow-up project, in order to enlarge the area of investigation in the light of recent policy developments at the European level.

Subject areas covered in the new project were:

- *The backlog issue*: The pendency time for getting a patent, as well as the related backlog of patents, which EPO has had to cope with, have risen considerably over the last decade.
- *Enhancing Patent Awareness within the European Parliament - Standing Committee on IPR*: With the entry into force of the Lisbon Treaty, the EP became *de jure* co-legislator for all legislative initiatives in the field of Intellectual Property (IP) and a common forum could be set up within the EP in order to ensure a coherent IP development within the Parliament.
- *Patent enforcement*: SMEs already encounter huge difficulties in enforcing their rights before national jurisdictions. Thus, there is little interest for SMEs to get patents if they are not in a position to enforce them. Therefore, it would be necessary to find special schemes for SMEs.
- *Regional dimension of IP in Europe*: The funds made available for achieving the knowledge-based society goal, which come under the *regional* programmes, have dramatically increased over the past few years. In this light, patents are one of the major tools which can foster innovation.
- *Patent and standardisation*: Ensuring a correct balance between the interests of licensees and licensors, the transparency of licensing and the identification of relevant IP in connection with standards.
- *The use of existing patents*: The prospect of a unique database of existing patents, which would help third parties in the preparation of strategies on how to use them.
- *Patent and competition*: In the past few decades, the European Court of Justice has made the legal distinction between the existence and the exercise of IPR: while the former (existence of IPR) is not challenged as such, the latter (exercise of IPR) has to comply with competition rules (cartel, abuse of rights).

- **A coherent IPR discussion and development within the EP in support of a future IPR strategy for Europe**

Supervisors: Paul Rübig, Jorgos Chatzimarkakis

Project Duration: August 2009 - October 2009

Workshop: 13 October 2009, EP, Brussels

The project comprised the preparation of a background study serving as an input to a workshop organised within the project, as well as a final report.

The workshop took place on 13 October 2009 as part of the 1st European Innovation Summit (13-14 October 2009, European Parliament). The summit's main theme was 'Strengthening Europe's Innovation Performance'. Intellectual Property Rights (IPR) were one of the subjects identified to be of high importance in this context and they provided the rationale for the underlying project.

The aim of the project in general and of the workshop in particular, was threefold:

- 1) Suggestions for a roadmap and timeline towards a strategy for a European Patent System (European Patent Court and Community Patent, IPR more generally) were developed by the cross-disciplinary working group assembled at the workshop.
- 2) The international dimension was examined. Focal points tackled in this context were the cooperation between patent offices, patents and customs, enforcement issues, in particular for small and medium-sized companies, and opportunities to further enhance cooperation of the different regional offices.
- 3) Given the overall topic of the Summit, a strong emphasis was placed on how the patent system can support innovation, research and development (R&D) investment and access to global markets, and, more generally, contribute to the future quality of life of Europe's citizens. Recommendations on how to better use and exploit existing knowledge and patents were also part of the workshop results.

3.2. Ongoing projects

- **Making Perfect Life**

Supervisors: Malcom Harbour, Vittorio Prodi

Project duration: August 2009 - December 2011

"Making perfect life" refers to a new set of engineering capabilities and ambitions that have developed at the beginning of this century. This study explains and illustrates this by looking at four different domains of bio-engineering:

- *engineering of the body;*
- *engineering of living artefacts;*
- *engineering of the brain;*
- *engineering of intelligent artefacts.*

There is a need to reflect from a societal point of view on the new developments in these engineering fields within the life sciences and the info-cogno sciences.

The main milestone of this project will be a conference in October 2010. The third and last phase will extend until 2011.

The preparatory phase of the project, which took place during the fall of 2009, defined the project focus. This resulted in the interim report 'Making Perfect Life: Bio-engineering (in) the 21st century'.

A project plan for the next two phases was developed and a project team was set up. A kick-off meeting with potential project partners was instrumental in discussing and prioritising research themes and issues. This meeting took place on 6 October 2009 at the Royal Academy of Arts and Sciences in Amsterdam.

- **Nanosafety**

Supervisors: Reinhard Bütikofer, Vittorio Prodi

Project duration: December 2009 - October 2011

The project deals with the potential environmental, health and safety (EHS) risks of engineered nanomaterials (ENM). Because of the great uncertainties regarding their actual health and environmental effects and numerous methodological challenges to established risk assessment procedures (toxicology, exposure and hazard assessments, life cycle assessment, analytics and others), ENM risk management is confronted with serious challenges. On the other hand, precautionary regulatory action with regard to ENM is demanded by a number of stakeholders and parts of the general public.

Regulation under uncertainty raises fundamental political questions of how lawmakers should regulate risk in the face of such uncertainty. To explore this issue in greater detail, the project focuses on two important aspects of regulation: Risk management strategies for ENM as discussed or proposed for the EU or its Member States, and risk communication problems and needs for EHS risks of ENM.

The findings of the project will be discussed with MEPs in a workshops. In addition, the project will use a participatory method in order to investigate the risk communication expectations of the general public.

- **E-Democracy: Technical possibilities of the use of electronic voting and other Internet tools in European elections**

Supervisor: Silvana Koch-Mehrin

Project duration: December 2009 - September 2011

The project deals with the potential of Internet-based applications to improve political participation and the quality of democratic decision-making at the European level.

Since the late 1990s, the World Wide Web has become a ubiquitous phenomenon in the area of political communication in developed democracies. To this end, the role of new media technologies in creating a European public sphere will be investigated. A major focus of the project will be the formal opportunities for European citizens to participate by means of Internet-based applications at the European level, including e-voting solutions. Good practice examples will provide a useful basis for presenting options for European decision-makers. The findings of the project will be discussed with experts and MEPs in two workshops.

- **Technology Options for Urban Transport**

Supervisors: Malcolm Harbour, Silvia-Adriana Țicău

Project duration: December 2009 - December 2011

This project will look, from an innovation-oriented angle, at technologies suitable for responding to the complexity and interdependence of urban travel systems. The project will provide an inventory of both existing and future technology options in urban transport, as well as an overview of the scientific knowledge about their potential impacts on health and environment, and will look at the socio-economic context in which these technologies are being or will be implemented.

The project will further analyse our knowledge about perceptions, motivations and changeability of behavioural patterns of the actors, in particular users, which are relevant for the successful implementation of technological and organisational innovations in urban transport. The overall aim is to highlight promising innovation pathways towards a more sustainable urban transport system.

- **Technology across borders**

Supervisor: Csaba Tabajdi

Project duration: January 2010 - June 2011

The main objective of the project is to trace the evolution of PTA from the OTA (Office of Technology Assessment of the US Congress)-model to a future pan-European participatory Technology Assessment (TA) and to deliver images of (P)TA's future.

The study will consist of two main elements. First, it will review the different existing PTA practices within the EU Member States. This will be done from a number of different perspectives that cover the most relevant aspects of (P)TA activities in Europe. These include: TA and its institutional settings, theory and methods for TA, TA and its impact on policy and decision-making.

Secondly, various joint, mutually beneficial actions will be identified in order to develop a common vision of a future pan-European (P)TA. The following issues will be addressed: main themes/domains TA should address/cover during the next five years and the clients/users to whom it should be geared (parliamentarians, other politicians, governments, etc.); the main features of a future pan-European project (which national TA projects require a wider-than-national scope, new kinds of pan-European TA projects); the new forms of scientist-politician interaction in the new approach, recommendations for future democratic governance of S&T policy, based on the use of the new pan-European TA approach.

- **Technological Impacts of Knowledge Transfer from Public Research Organisations**

Supervisor: Salvatore Tatarella

Project duration: January 2010 - December 2011

Knowledge transfer from Public Research Organisations (PROs) principally to industry was an important cornerstone of the Lisbon Strategy. Despite the widespread dissemination and acceptance of the National Innovation Systems (NIS) heuristic, significant parts of the R&D policy discussion still rely on linear ideas about the relationship between knowledge generation and use. Thus, the ‘European Paradox’ discussion of the European Commission’s 1997 Green Paper on Innovation focused on the apparently poor performance of the science-use link in Europe. Nevertheless it tended to ignore systemic performance drivers, such as absorptive capacity, the availability of ‘focusing devices’ that bring together industries and academies to identify common research areas, the effects induced by the dynamics of markets, and so on. The underlying assumption is that ‘science push’ ought to work, and that, if it fails to do so, that is because the push is too weak or is impeded, non considering that there might be a poor match between what the scientists are doing and what society needs or can use. The project wishes to analyse the real impacts of knowledge transfer from PROs, its strengths and weaknesses, according to a technological and regional breakdown, as well as to see whether major trends can be defined in order to shape future policies.

4. 8th STOA Annual Lecture 2009

‘One web, free and open for all’

Speaker: Sir Tim Berners-Lee, Director of the World Wide Web Consortium and of the World Wide Web Foundation

1st December 2009, EP, Brussels

Sir Tim Berners-Lee, inventor of the World Wide Web, was the keynote speaker of the 8th STOA Annual Lecture entitled ‘*One web, free and open for all*’. It was a privilege for STOA and the European Parliament to receive such a highly distinguished guest. Sir Berners-Lee is Director of the World Wide Web Consortium (a Web standards organisation, which develops interoperable technologies to lead the Web to its full potential), co-director of the Web Science Research Initiative (the first multidisciplinary research body to examine the World Wide Web and offer the practical solutions needed to help guide its future use and design) and Director of the World Wide Web Foundation (funding and coordinating efforts to further the potential of the Web to the benefit of humanity).



The event, under the European Parliament’s patronage granted by President Jerzy Buzek, was opened by Ms Silvana Koch-Mehrin, Vice-President of the European Parliament responsible for STOA, together with Mr Paul Rübzig, STOA Chairman.



As the speaker made it clear, the topic has a huge potential for issues concerning *inter alia* Web developments, dangers for privacy, security and trust, costs and benefits of trust, the need for secure e-government systems, object-oriented security, public sector services, future e-services, sources of uncertainty, content and sanctions on the Web.

The main lecture was preceded by a STOA-organised workshop on *'Trust and the Web'* that addressed some of these issues. Experts such as Prof. George Metakides from the University of Patras, Prof. Reinhard Posch, Chief Information Officer of the Austrian Federal Government, and Prof. Nigel Shadbolt from the University of Southampton, together with Ms Silvia-Adriana Țicău, STOA Panel Member, addressed the audience. Some of the important messages that emerged from this workshop were: Europe needs to take significant actions to ensure that it has the lead in the fields of identity and data protection; security and data protection are the key ingredients to enable fully empowered public e-services; new technologies, like semantic and ontology-based approaches, have a high potential to improve efficiency to redesign government processes, but challenges still remain.

The audience was eager to exchange views and ask many questions to Sir Berners-Lee, who invented this Internet-based hypermedia initiative for global information sharing while at CERN (European Organization for Nuclear Research), the European Physics Laboratory. This enriching discussion was moderated by Mr Malcolm Harbour, STOA Vice-Chairman.



This important day started with a press conference in the morning. Sir Berners-Lee also gave a number of private media interviews and one to Europarl TV.

A unique chance to discuss the future in this area was offered to the STOA Panel and other interested Members during a lunch with Sir Tim Berners-Lee, Prof. Metakides, and Prof. Posch. Furthermore, STOA co-organised with the European Internet Foundation a dinner in Bibliotheque Solvay in honour of Sir Tim Berners-Lee.

5. Other workshops/conferences

- **Conference ‘Working and Living with Nanotechnologies’**
2 April 2009, EP, Brussels

The Conference was the final step of the NanoCap project, a capacity building project for European trade unions and environmental NGOs. With input from five universities, NanoCap focussed on the benefits, risks and ethics of nanotechnologies. The aim was to assist trade unions and NGOs in developing a position on nanotechnologies and taking part in the public debate. NanoCap was financed through the Science and Society activity of the 6th Research Framework Programme (FP6), for the period September 2006 – August 2009. It was coordinated by IVAM UvA BV. Detailed information on the project can be found at the website: www.nanocap.eu.

The conference objectives were to present positions and perspectives adopted by European Trade Unions and Environmental NGOs concerning the impact of nanotechnology at the workplace and on the environment, by

- Setting priorities for the responsible development of nanotechnologies, especially regarding environmental and workplace safety;
- Exchanging views with nanotechnology stakeholders and policy-makers;
- Establishing pathways for implementing a precautionary approach;
- Presenting a Nanoethics portfolio.

STOA participated in this conference presenting a review of its activities in the field. The Conference was opened by Mr Malcolm Harbour, STOA Vice-Chairman.

- **Biodiversity Research Conference**
4 November 2009, EP, Brussels

The Conference was jointly organised by the Brussels offices of CLORA, CZELO, ENEA, Leibniz-Gemeinschaft, Helmholtz-Gemeinschaft and PolSCA, under the patronage of STOA. It was chaired by Mr Paul Rübzig, STOA Chairman.

The conference aimed at identifying current gaps and bottlenecks in the biodiversity research agenda, as well as at exploring and defining priorities for consideration in the process of development of the EU biodiversity research strategy. Its findings can also be useful in predicting future environmental, social and economic implications.

The opening and closing speeches were held by Mr Carsten Nesshöver from the European Platform for Biodiversity Research Strategy (EPBRS). Main points raised included the European Year of Biodiversity 2010, research funding in the European area and the need for the national funding schemes to be taken into consideration also in the European context. A highlight of the event was the presentation of EPBRS. Founded in 1999, EPBRS is a forum gathering scientists from the natural and social sciences, policy-makers and stakeholders to discuss and identify important issues in this research area. The network brings together the at EU and at international level scientists, NGOs and other stakeholders with the aim of producing recommendations and consultation papers for policy-makers.

The debate, which followed the presentations, was focussed on questions of cost and benefit of preserving biodiversity and halting biodiversity loss. Furthermore, the link between biodiversity and poverty at a local level was mentioned, as was the need of a further strengthening of biodiversity issues in the FP8 programme. The need of public participation and biodiversity awareness-raising was underlined.

- **Conference on ‘Co-operation between the EU and Developing Countries in Science and Technology in relation to Socio-Economic Development’**
4 March 2009, EP, Brussels

The conference was organised by STOA, in collaboration with the Institut de Recherche pour le Développement (IRD) and with contributions from the Committee on Development and EPTA. It was chaired by Mr Philippe Busquin.

The conference stressed the importance of S&T partnerships with developing countries. This should take the form of a mobilisation of global S&T for the Millennium Development Goals, putting the emphasis on higher education, business opportunities for the private sector, S&T infrastructure and advice for developing countries, including greater public engagement with S&T, accessible and affordable high bandwidth electronic communications for the sharing of research knowledge, the evolution of research communities and the development of digital technology.

The conference stressed that in the context of the financial and economic crisis, the efforts to support S&T partnerships are even more necessary, in order to allow developing countries to confront the global challenges, including poverty, climate change, food security and health for all.

6. Other STOA activities

- **STOA Panel meeting with DG Research**

29 January 2009, EP, Brussels.

The meeting of the STOA Chairman, Mr Philippe Busquin, and Vice-Chairman, Mr Malcolm Harbour, as well as other Panel members (Ms Corbey, Ms Jacobs and Mr Chatzimarkakis) with Research Commissioner Janez Potočnik, accompanied by officials from his cabinet and the European Commission's Research DG, was characterised by a friendly and cooperative atmosphere.

The following points were discussed: (i) MEP-Scientist Pairing Scheme: review of the achievements and possibilities for future development of the scheme; (ii) strengthening and spreading of Technology Assessment (TA) within the EU, with particular emphasis on the new Member States.

The Commissioner was presented with the Pairing Scheme Assessment Report adopted by the STOA Panel in December 2008, a comparative assessment of similar schemes implemented in the UK, France and Australia, as well as recommendations for the further development of the scheme (based on the Assessment Report).

One important outcome of the meeting was the proposal of Commissioner Potočnik to integrate the scheme, as well as the development of TA across Europe, into a larger call for proposals that would go public in 2010.

- **Lunch-debate with Ms Françoise Barre-Sinoussi on the Directive on the protection of animals used for scientific purposes**

25 March 2009, EP, Strasbourg

Members taking part in this meeting with Ms Barre-Sinoussi, Directrice de recherche at Inserm and Nobel Prize laureate for Medicine in 2008, and representatives of French research institutions included the STOA Chairman, Mr Philippe Busquin, the STOA Vice-Chairman, Mr Malcolm Harbour, STOA Panel members Ms Esther de Lange and Mr Jorgo Chatzimarkakis, the Chairman of the AGRI Committee, Mr Neil Parish, MEP, Ms Catherine Trautmann, MEP, and Ms Roselyne Lefrancois, MEP.

This special event was preceded by two visits to the Primate Centre of the University of Strasbourg. The first visit took place on 11 March 2009 and Members participating included Mr Philippe Busquin, Ms Catherine Trautmann and Ms Roselyne Lefrancois. The second visit, by Mr Neil Parish, took place just after the lunch (25 March).

- **Lecture by Prof. Luc Montagnier**

1 April 2009, EP, Brussels



The lecture by Prof. Montagnier, Nobel Prize laureate for Medicine in 2008, was coorganised by STOA and the ITRE and ENVI Committees and was chaired by the STOA Chairman, Mr Philippe Busquin. The lecture, entitled 'L'avenir de la recherche biomédicale au 21ème siècle' ('The future of biomedical research in the 21st century'),

tackled new epidemics linked to infectious agents and chronic illnesses. Among these, AIDS, malaria, tuberculosis and cancer were mentioned, as were factors which favour their emergence. The evolution of bacteria was elaborated upon in this context, as well as the most plausible solution: preventive medicine.

The lecture was well-attended, as was the subsequent panel discussion, moderated by the STOA Vice-Chairman, Mr Malcom Harbour, which was centred on the theme ‘How to make science a course choice for more young people?’

- **Presentation on the role of STOA in the EP to ELC (Federation of European Food Additives, Food Enzymes and Food Cultures Industries)**
7 April 2009, Brussels

On the request of this federation, the STOA secretariat gave a presentation to their annual meeting on the subject of ‘The role of STOA in the European Parliament’. This presentation included: What is STOA, its history, role and working methods (including explanation of the STOA Bureau and Panel), examples of recent STOA projects, with special reference to projects related to agriculture, an overview of recent STOA events and information about the EPTA network.

- **Visit of Bundestag delegation to STOA**
23 April 2009, EP, Strasbourg

The participants in the meeting were:

- STOA: Philippe Busquin, Malcolm Harbour, Paul Rübzig, Jorgo Chatzimarkakis, Theodoros Karapiperis and Miklós Györffi;
- Bundestag: Ulla Burchardt, Chairwoman of the Committee on Education, Research and Technology Assessment (CERTA), Armin Grünwald, Director of ITAS (Institute for Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology), and Friedhelm Kappenstein, Deputy Head of the CERTA Secretariat.

The following points were agreed in a ‘Memorandum of understanding’ which summarises the outcome of the meeting:

- Europe has become a world leader in TA, in practice as well as in theory;
- TA in Europe shows a high diversity of approaches, procedures, institutions and methods, which is an indicator of the cultural diversity and richness in Europe;
- PTA has proven to be a highly valuable element in a constructive relation between democracy and science;
- Each of the existing PTA organisations is active within the national boundaries, while EPTA acts as an excellent example of an informal PTA network;
- PTA, however, is still not present in all European countries; in particular, it is absent from the new EU Member States;
- Consequently, actions are needed in order to reinforce PTA in the EU;
- The scope of the envisaged actions involves developing the concept of PTA in all EU national parliaments;
- The possibilities to enhance the operational capacity of EPTA for such actions should be analysed, but also the possibility to involve the European Institute of Technology.

- **EPTA Directors' meeting**

27 – 29 April 2009, Edinburgh and Connel Ferry, UK

The meeting was organised by the Parliamentary Office of Science and Technology (POST) of the UK Parliament and took place in the Royal Society of Edinburgh (27 April 2009) and the Falls of Lora Hotel, Connel Ferry (28 April 2009). Participants included the directors and/or other officials from most EPTA members and associates, including STOA, which was represented by Mr Theo Karapiperis, Head of Unit responsible for the STOA Secretariat.

On Monday, 27 April, the meeting comprised:

- A presentation on the European Commission (EC)'s Science & Society actions, with emphasis on the forthcoming call for proposals 'Mobilisation & Mutual Learning', by Philippe Galiay from the EC's Research Directorate-General;
- A discussion on the EuroScience Open Forum (ESOF), including an assessment of the EPTA participation in ESOF 2008 and plans for ESOF 2010 (Turin);
- Information about the next EPTA Council Meeting and Conference, due to be held on 2-3 November 2009 in London, by POST Director David Cope;
- A unanimous endorsement of the proposal for the Danish Board of Technology (DBT) to hold the 2010 EPTA Presidency;
- Presentations on:
 - The Royal Society of Edinburgh (RSE) by Dr William Duncan, RSE Chief Executive;
 - Scotland's Future Forum by Robert Rae, Forum Director;
 - Institutionalisation of Technology Assessment in Japan by Prof. Hideaki Shiroyama, University of Tokyo;
 - Technology market foresighting in Scotland by Terry Hurley; Managing Director of ITI (Intermediary Technology Institute) Techmedia;
- A reception at the Scottish Parliament and a dinner at the Royal Society.

The meeting continued on Tuesday, 28 April, with the following discussion points:

- The Swedish presence in EPTA;
- Information on new developments by EPTA members;
- EPTA website and EPTA newsletter;
- Evaluation of joint EPTA projects.

On Wednesday, 29 April, the directors made a site visit to the Scottish Association for Marine Science, Dunstaffnage Marine Laboratory.

- **Energy Foresight Network (EFONET) workshops**

29-30 April, 2009, National Technical University of Athens (NTUA), Greece

STOA participated in the 'Energy Foresight Network' (EFONET) project as an observer. The project was approved for funding under the 7th RTD Framework Programme in the area of 'Energy - Scientific support to policy'. It started on 1 January 2008 with a duration of 30 months.

The ultimate objective of the EFONET project was to provide the European Commission with inputs for the formulation, review and evaluation of European energy strategies. The project aimed at assessing the knowledge and prospects for a medium and long-term transition to a sustainable, secure, low-carbon energy system with particular attention to the contribution that energy foresight methods can provide to policy-making. EFONET was set to achieve its goals through the organisation of a structured discussion platform on energy. In this respect two consecutive workshops were organised at the National Technical University of Athens (NTUA). STOA contributed in the group work and discussion roundtables.

The first workshop was entitled '*Lessons Learned from National Energy Foresight Transfer to European Level?*'. It discussed several country reports, good practice in energy foresight – Greek national foresight as an example –, the status quo of EU energy foresight and EU competences in the energy field, the International Energy Agency (IEA) expert group on energy R&D priority setting, the comparison US vs. European energy foresight initiatives and, finally, energy foresight at the EU level, looking into how and which good practice examples of national energy foresight can be transferred to EU level.

The second workshop, entitled '*Approaches to Participatory Energy Foresight at EU Level*' was articulated in two sessions dealing, from different angles, with the energy foresight topic.

- **The 8th NanoCap Project Team Meeting**
15-17 June 2009, Dublin

In the course of the meeting, which was attended by the STOA Secretariat, the following topics of interest to STOA were discussed:

- The proceedings of the NanoCap/STOA conference of 2 April 2009;
- The NanoCap Final Report, featuring an assessment of the project by its different partners: importance for the partner, the partner's most important activities and findings, impact on the national/European nano-debate, priority nano-issues in the partner's country, project spin-offs, (nano-)future after NanoCap;
- Operationalising the precautionary principle for the workplace and the environment.

- **XXIII International Congress of History of Science and Technology**
30 July 2009, Budapest

STOA participated with a presentation entitled '*History and perspectives of PTA. The case of the EP*'.

- **EPTA Council meeting and Conference,**
2-3 November 2009, London

The annual EPTA Council meeting and Conference was held in the UK Houses of Parliament. The STOA Panel was represented by Mr Malcolm Harbour. He was accompanied by Mr Miklós Györffi, STOA Administrator.

The EPTA Council Meeting on 2 November 2008 dealt specifically, *inter alia*, with:

- Participation in Euroscience Open Forum 2010, Turin;
- Submission to the European Commission's FP7 Science & Society Call.

The EPTA Conference, on 2-3 November 2009, comprised keynote lectures by:

- Professor Jim Dator, Director, Hawaii Research Center for Futures Studies, University of Hawaii, speaking on '*Four Futures for Governance*', and
- Brian Brader, UK Government Office for Science's Horizon Scanning Centre, speaking on '*Futures Thinking in UK Public Strategy Development*'.

Among the presentations by EPTA members, Chistofer Coenen, ITAS, presented the 'Human Enhancement' project on behalf of STOA.

- **Internet Governance Forum (IGF)**
15-19 November 2009, Sharm et-Sheikh, Egypt

Ms Teresa Riera Madurell represented STOA on the European Parliament delegation attending the Internet Governance Forum (IGF), which was held on 15-19 November 2009 at Sharm et-Sheikh, Egypt.

At the Panel meeting of 26 November 2009 Ms Riera Madurell gave an account of her impressions of the IGF meeting, drawing attention to some important points agreed by the participants:

- to continue with IGF after the expiry of its 5-year mandate;
- to maintain the openness of IGF instead of formulating a rigid strategy;
- to confer a more universal character to ICAAN (currently under US control);
- to consider a French proposal for creating a European Forum for Dialogue on Internet Governance, which would go beyond the EU (Mediterranean?).

The STOA Chairman pointed to STOA's long involvement in IGF and urged Panel members to participate with a bigger delegation in the 2010 IGF meeting in Lithuania.

7. Use of STOA 2009 budget

Projects (finished in 2009)	€ 44,415
Projects (ongoing in 2009)	€ 538,575
Extra workshops	€ 3,299
Major events	€ 13,762
Total	€ 600,052
Initial STOA budget	€ 550,000
Transfer	€ 60,000
Overspending (% of initial budget)	9.1

