



Science and Technology
Options Assessment

Stocktaking of STOA activities 7th Legislature (2009-2014)

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1. STOA, scientific advice at the service of the European Parliament

1.1. Mission and activities

STOA (Science and Technology Options Assessment) is an official body of the European Parliament (EP), launched in 1987. STOA's mission is to ensure that European policy-making is supported by sound scientific evidence on strategic issues confronting the European society. Scientific evidence and advice are often needed to underpin decision-making, as increasingly developments in science and technology have potential implications across many policy areas, and thereby across the full spectrum of European society. When the Members of the European Parliament (MEPs) consider that it would be helpful in their policy-making role to seek out expert, independent assessments of the scientific or technological options in various policy sectors, then STOA is at their disposal.

STOA's activities mainly concentrate on strategic topics and societal challenges, such as:

- Future energy and transport scenarios;
- Sustainable society, covering for instance food security and sustainable agriculture;
- Developments in information and communication technologies, including ethical implications of social media and e-democracy;
- Future prospects in health and life improvements.

STOA fulfils its mission primarily by carrying out - in a neutral and independent way - science-based projects assessing the widest possible range of options to support legislators.

STOA's long, strategic and interdisciplinary record of projects shows its contribution to a wide range of research and policy areas, including but not limited to, nanosafety, e-Democracy, bio-engineering, health, transport, cloud computing, innovation, smart energy grids, climate change and sustainable agriculture. A typical STOA project investigates policy options with respect to the promotion and deployment of existing and emerging technologies in a specific policy area, and assesses the impacts of these options. This ensures that MEPs are provided with state-of-the-art knowledge to reflect upon when carrying out their policy-making roles as elected co-legislators of the European Union (EU). Of course, Members also take into account a variety of other factors when they make up their minds, such as their individual political and ethical points of view.

The projects are carried out in partnership with external experts under strict contractual agreements, in order to provide state-of-the-art and objective opinions for Members. These can be research institutes, universities, laboratories, consultancies or individual researchers. All STOA studies are available for everyone who is interested, thus encouraging an open dialogue between citizens and legislators, and creating added value for studies by spreading the information to the wider public. The studies can be downloaded from the STOA website.

STOA's activities also aim to bridge the gap between the scientific community and policy-makers. This is done by stimulating dialogue and discussion forums, especially in the form of workshops. STOA organises an increasing number of accessible workshops on a wide range of

topics of political interest. All these events are open to the public and their outcomes are posted on the STOA website.

The STOA Annual Lecture is the high point of STOA's activities every year and gives an opportunity to Members of the European Parliament, officials, scientists and the wider public to listen to eminent scientists – often Nobel Prize laureates – speaking about subjects featuring high on the political agenda: climate change, sustainability, the Information Society, advances in medical research, but also major discoveries in fundamental science.

A special way of enhancing mutual understanding between scientists and policy-makers is via the MEP-Scientist Pairing Scheme, which aims at a long-term, intensive cooperation between Members and experts. This scheme has a two-fold effect:

- Firstly, policy-makers gain a deeper understanding of the scientific processes, the practicalities of undertaking research and the potential of scientific knowledge;
- Secondly, practising scientists learn about the role of science in policy-making, the policy-making process itself and how to interact effectively with politicians.

1.2. The STOA Panel

The STOA Panel is politically responsible for STOA's work. It is composed of 15 Members of the European Parliament:

- the Vice-President of the European Parliament responsible for STOA;
- four members appointed by the Committee on Industry, Research and Energy (ITRE);
- two members appointed by the Committee on Employment and Social Affairs (EMPL);
- two members appointed by the Committee on the Environment, Public Health and Food Safety (ENVI);
- two members appointed by the Committee on the Internal Market and Consumer Protection (IMCO);
- two members appointed by the Committee on Transport and Tourism (TRAN);
- two members appointed by the Committee on Agriculture and Rural Development (AGRI).

The members of the STOA Panel are appointed at the beginning of each parliamentary term for a renewable two-and-a-half-year period. A constituent meeting is held at the beginning and the middle of each parliamentary term, in which the Chair and two Vice-Chairs are elected by the Panel members.

The STOA Bureau runs the activities of STOA and prepares the Panel meetings. It is composed of four members, namely the EP Vice-President responsible for STOA, the STOA Chair and the two Vice-Chairs.

In January 2012, Mr Vlasák replaced Mr Chichester as the EP Vice-President responsible for STOA. In March 2012 the STOA Panel members elected the rest of the members of the STOA Bureau. Mr Correia de Campos, former first STOA Vice-Chairman took over the chairmanship from Mr Rübig, who became the first STOA Vice-Chairman. Mr Harbour remained the second STOA Vice-Chairman.

The STOA Secretariat executes the decisions of the STOA Panel with the assistance of external experts and trainees.

STOA Panel members (April 2014)



Oldřich VLASÁK - *ECR, CZ*
EP Vice-President
STOA Bureau member



António F. CORREIA DE CAMPOS - *S&D, PT*
Chairman
STOA Bureau member
IMCO Committee (Internal Market and Consumer Protection)



Paul RÜBIG - *EPP, AT*
1st Vice-Chairman
STOA Bureau member
ITRE Committee (Industry, Research and Energy)



Malcolm HARBOUR - *ECR, UK*
2nd Vice-Chairman
STOA Bureau member
IMCO Committee (Internal Market and Consumer Protection)



Antonio CANCIAN - *EPP, IT*
TRAN Committee (Transport and Tourism)



Regina BASTOS - *EPP, PT*
EMPL Committee (Employment and Social Affairs)



Kent JOHANSSON - *ALDE, SE*
ITRE Committee (Industry, Research and Energy)



Evžen TOŠENOVSKÝ - ECR, CZ
ITRE Committee (Industry, Research and Energy)



Giovanni LA VIA - EPP, IT
AGRI Committee (Agriculture and Rural Development)



Antigoni PAPADOPOULOU - S&D, CY
EMPL Committee (Employment and Social Affairs)



Vittorio PRODI - S&D, IT
ENVI Committee (Environment, Public Health and Food Safety)



Teresa RIERA MADURELL - S&D, ES
ITRE Committee (Industry, Research and Energy)



Csaba Sándor TABAJDI - S&D, HU
AGRI Committee (Agriculture and Rural Development)



Salvatore TATARELLA - EPP, IT
ENVI Committee (Environment, Public Health and Food Safety)



Silvia Adriana ȚICĂU - S&D, RO
TRAN Committee (Transport and Tourism)

1.3. External scientific consultancy for STOA studies and workshops

The STOA projects decided upon by the STOA Panel (including the workshops that are part of a project) are carried out by the STOA Secretariat with the help of external experts.

In 2014, the European Parliament signed a multi-annual framework service contract for the provision of scientific and technological expertise to STOA in the following nine areas:

1. Energy
2. Transport
3. Environment (including climate change)
4. Information & Communication Technology (ICT) and Information Society
5. Nanoscale science and technology (including industrial applications)
6. Life-sciences and human well-being
7. Agriculture, food and biotechnology
8. Science, technology and innovation policy
9. Safety and security technologies.

This framework contract will enable the European Parliament to continue to fulfil the mission and objectives of STOA over the next legislature. The invitation to tender was launched in 2012. Eighty five (85) offers were received and evaluated during 2013. A total of 45 contracts were signed in early 2014. This represents 30 different tenderers, 39 joint tenderers belonging to consortia, 44 sub-contractors and 27 Member States. The multi-service contract will be valid until early 2018.

Compared to the previous edition awarded in 2009, the 2014 framework contract will make it possible to open competition for every new STOA study between up to 5 different contractors (with the objective of avoiding vendor lock-in and maximising value for money).

It will also include the new research field on assessment of 'Safety and security technologies'.

This new domain covers the expertise needed to:

- (a) assess the impact of technologies used for safety and security purposes, and understand their advantages/disadvantages, in order to avoid incidents or attempt to reduce their impacts if unavoidable,
- (b) identify what are possible control mechanisms (including policy-related ones) to strike an appropriate balance between the advantages and disadvantages identified above,
- (c) draw conclusions about overall relevance, feasibility, implementation costs and long-term sustainability of technologies used for safety/security purposes, taking into account the possible optional control mechanisms identified above.

This new field of STOA research applies potentially to any domain where technology can be used to save lives, avoid major availability disruption of public services, detect illicit or illegal human behaviour, preserve the intellectual property rights and copyright of authors, or preserve the integrity and the confidentiality of sensitive information to protect privacy.

1.4. STOA on the European and international scene

STOA has developed close ties with relevant departments of the European Commission, especially within the Directorate-General for Research and Innovation and the Joint Research Centre (JRC), as well as with Professor Anne Glover, Chief Scientific Advisor to the European Commission President. Professor Glover had a working lunch with members of the STOA Bureau in May 2012 and was keynote speaker in the STOA Annual Lectures 2012 and 2013.

STOA Panel members have regularly participated in various international science policy forums, such as the Science and Technology in Society (STS) *forum*, the Internet Governance Forum, the EuroScience Open Forum (ESOF) and the World Science Forum.

STOA is finally active in Technology Assessment networks on an international level. It is a founding member of the European Parliamentary Technology Assessment (EPTA) network and participates in the EPTA Directors' meeting and the EPTA Council meeting and Conference organised annually by the rotating EPTA presidency. As part of its cooperation with EPTA members, STOA published in 2009 the English translation of the study '*Nanotechnology in the food sector*', which had been commissioned by TA SWISS, STOA's Swiss counterpart, and published in German earlier that year.

2. STOA achievements during the seventh legislature

2.1. Introduction

STOA carried out 24 projects during the seventh legislature. These projects consisted in general of a series of working documents leading to a final study, which usually drew upon the results of one or more workshops organised in the context of the project. STOA held 21 such workshops in the seventh legislature. Interim and final results were routinely presented during regular Panel meetings in Strasbourg. The outcomes of some of the projects, notably '*e-Democracy*' and '*Sustainable management of natural resources*', were presented to relevant committees, during regular committee meetings.

In the course of the seventh legislature, STOA further developed and consolidated the practice of having each STOA project accompanied by one or more Panel members (Lead Panel Member(s) for the project in question). Lead Panel Members are expected to follow the execution of the projects they are responsible for and act as STOA ambassadors to their committees, ensuring the flow of information in both directions.

Alongside projects, STOA also organised 38 *ad hoc* events (mostly workshops) and five Annual Lectures (see Section 2.8) on politically relevant science and technology subjects. These events aimed to update Members and committees on the latest science and technology issues and allow science-based evidence to underpin policy-making.

STOA domains

STOA's work during the seventh legislature covered five broad domains:

1. Eco-efficient transport and modern energy solutions;
2. Sustainable management of natural resources;
3. Security of the Internet, including e-Government, cloud computing and social networks;
4. Health and new technologies in the life sciences;
5. Science, technology and innovation policy.

2.2. Domain 1: Eco-efficient transport and modern energy solutions

Highlight

A highlight in this area was the study on 'Eco-efficient transport futures for Europe' (2013).

This study led to important results, based upon the fact that 80% of the Europeans live in urban areas and urban transport accounts for a significant percentage of total mobility.

Options resulting from this study include not only enabling progress in propulsion and information technologies, but also enabling new concepts of mobility, considering non-technical factors such as the needs and perceptions of end-users.

Studies

- Eco-efficient transport futures for Europe, 2013
- Technology options in urban transport: Changing paradigms and promising innovation pathways, 2012
- Methanol (CH₃OH): A future transport fuel based on hydrogen and carbon dioxide?, 2014
- Integrated e-ticketing for city-based urban transport and tourist sites, 2014
- Future metal demand from photovoltaic cells and wind turbines - Investigating the potential risk of disabling a shift to renewable energy systems, 2011
- Smart grids / Energy grids - The techno-scientific developments of smart grids and the related political, societal and economic implications, 2012

Study-related workshops

- Challenges arising from the large-scale deployment of smart grids in Europe (01/04/2012)
- Eco-efficient transport futures for Europe (07/05/2013)
- Integrated e-ticketing for public transport and tourist sites (16/10/2013)
- Methanol: A future transport fuel based on hydrogen and carbon dioxide? (17/10/2013)

Ad hoc events

- Avoiding ash disruptions: Can technology help manage air space better? (23/06/2010)
- CO₂: a future chemical fuel (22/03/2011)
- STOA breakfast: 'Solar Impulse' (26/05/2011)
- STOA breakfast with the European Heat Pump Association (EHPA) (6/3/2012)
- The energy storage challenge: which contribution from chemical sciences? (11/02/2014)

2.3. Domain 2: Sustainable management of natural resources

Highlight

The workshop 'How to feed the world in 2050?', held on 4 December 2013, is a highlight for this domain. The outcomes emphasised that European agriculture needs to become more sustainable, which is a task for everyone at all stages of the food chain.

It was clear for the experts and stakeholders that we have to produce more food, with fewer inputs, and that sustainable agriculture should be promoted and supported. Threats to the food supply, such as climate change and overuse of fresh water, should be combatted. Options for cutting food wastage were discussed.

For this event, STOA prepared some special communication products, such as an educational video on the concept of a food eco-footprint, and also had other coverage on new media with a well-read blog post and a report on YouTube.

Studies

- Systemic approach to adaptation to climate change and renewable energy harnessing (biomass and mini-hydro), 2012
- Sustainable management of natural resources with a focus on water and agriculture, 2013
- Technology options for feeding 10 billion people:
 - Interactions between climate change & agriculture and biodiversity & agriculture, 2013
 - Plant breeding and innovative agriculture, 2013
 - State-of-the-art report on 'Options for sustainable food processing', 2013
 - Options for cutting food waste, 2013
 - Recycling agricultural, forestry and food wastes & residues for sustainable bioenergy and biomaterials, 2013
 - Options for Sustainable food and agriculture in the EU - Synthesis of the project 'Technology options for feeding 10 billion people', 2013

Study-related workshops

- Sustainable management of natural resources (16/10/2013)
- How to feed the world in 2050? (04/12/2013)

Ad hoc workshops

- Biodiversity research conference (04/11/2009)
- The impact of EU GMO regulation on biotechnology research for the public good (25/02/2010)
- Synthetic biology: New potentials for the European bio-economy (06/06/2012)
- Precision agriculture and optimised use of fertilisers (06/12/2012)
- Presentation of the IPCC report on climate change - The physical science basis (05/11/2013)

2.4. Domain 3: Security of the Internet, including e-Government, cloud computing and social networks

Highlights

Two studies, 'Security of eGovernment Systems' (2013) and 'Cloud Computing Services and Social Networks' (2014) came to similar conclusions - that a successful European web needs to ensure privacy for users and security of the infrastructure.

The first of these studies focused on e-delivery of government services across borders. It suggested pragmatic solutions for the exchange of data across different systems and national borders. The ideal of one supra-national system is probably not possible, so the less optimal approach of developing practical solutions to allow multiple systems to work with each other should be encouraged. The study on cloud computing argued for the need for security, privacy, the creation of a trustworthy digital environment and the establishment of an ecosystem that stimulates ICT industries.

The study on 'E-public, e-participation and e-voting in Europe' (2011) concluded that, based on the analysis, the promotion of a comprehensive system for e-voting in Europe cannot be recommended for the time being. However, the study suggested that e-participation could start addressing the perceived 'democratic deficit' in the EU: it could develop the participation of EU citizens in the European legislative process and help to create a European political sphere, although this would not be as efficient as the creation of a European citizenship similar in concept to a national one.

Studies

- E-public, e-participation and e-voting in Europe, 2011
- Security of e-Government systems, 2013
- Potential and impact of cloud computing services and social network websites, 2014

Study-related workshops

- e-Voting (17/03/2011)
- e-Participation (26/05/2011)
- Security of e-Government systems (19/02/2013)
- The potential of cloud computing for Europe (02/10/2013)

Ad hoc events

- Barrier-free digital television (28/10/2010)
- Ethical implications of emerging ICT's: To what extent can we address them? (31/03/2011)
- State-of-the-art of machine translation - Challenges and opportunities (03/12/2013)
- New learning and teaching technology options (08/04/2014)

2.5. Domain 4: Health and new technologies in the life sciences

Highlights

The study 'Making perfect life' (2012) examined the convergence of biology and technology. It recommended a broader bioethics debate going beyond the life sciences to include nanotechnology, biotechnology, information technology and the cognitive sciences. The study also found a need for forward-looking biopolitics, to ensure new practices were monitored and regulated, and challenges anticipated.

'Human enhancement - the ethical issues', a workshop held on 26 April 2012, discussed the studies on 'Human Enhancement' (May 2009) and 'Making Perfect Life' with representatives from the Protestant, Catholic, Orthodox, Jewish, and Muslim communities. Those present agreed that research into human enhancement needed to be managed very carefully. But views were more diverse on how far medicine should go in terms of treatments, interventions and enhancements.

The STOA study 'NanoSafety - Risk Governance of Manufactured Nanoparticles' (2012) suggested there needed to be greater clarity about nanotechnology - around hazards, regulations, definitions, and information available to consumers and authorities.

The workshop 'Strengthening health protection in times of economic crisis' (21 February 2013) explored the consequences of the crisis on health, the European health system response and how public health policy can improve health outcomes in this situation.

A special achievement in this domain is that five articles were published in peer reviewed journals on different topics.

Studies

- NanoSafety - Risk governance of manufactured nanoparticles, 2012
- Making perfect life: European governance challenges in 21st century bio-engineering, 2012

Study-related workshops

- Making perfect life (10/11/2010 and 11/10/2011)
- Risk governance of manufactured nanoparticles (21/11/2011)
- Human Enhancement - The ethical issues (26/04/2012)

Ad hoc events

- Brain Awareness Week 2010: How our brain works (16/03/2010)
- A roadmap for ageing research - The priorities for European ageing research (11/05/2010)
- Nanomedicine in Europe: Present and future (02/06/2010)
- Health-related research infrastructures (26/10/2010)
- Brain Awareness Week 2011: Education – a lifelong challenge for the brain (15/03/2011)
- A roadmap for ageing research I (18/10/2011)
- Chemistry for a better life (09/11/2011)
- Paving the way for a quieter Europe (23/11/2011)

- Emerging and re-emerging infectious diseases: A continuous challenge for Europe (19/06/2012)
- Research on digestive and liver diseases: a priority for Europe (18/09/2012)
- Launch of the EASAC report 'Direct-to-Consumer genetic testing' (03/12/2012)
- Risk in innovation: Balancing benefits and hazards (30/01/2013)
- Strengthening health protection in times of economic crisis (21/02/2013)
- European Month of the Brain 2013: What does it mean to have a brain disorder? (23/04/2013)
- Intervention tools and strategies to improve health programmes (04/03/2014)

List of publications

- 'Health and austerity in Europe', *Health Policy* 2013
Quaglio GL, Karapiperis T, Van Woensel L, Arnold E, McDaid D.
- 'Health protection in times of economic crisis: Challenges and opportunities for Europe.', *Journal Public Health Policy* 2013
McDaid D, Quaglio GL, Correia de Campos A, Dario C, Van Woensel L, Karapiperis T, Reeves A.
- 'Europe to take up brain disorders challenge', *Lancet Neurology* 2013
Quaglio GL, Karapiperis T, Di Luca M, de Campos AC, Dan B.
- 'Research on digestive and liver diseases: a priority for Europe - the societal importance of gastrointestinal diseases and research', *European Journal Gastroenterology Hepatology* 2013
Stockbrugger R, Quaglio GL, O'Morain C, Rubig P, Manns M.
- 'Emerging and re-emerging infectious diseases: a continuous challenge for Europe', *European Respiratory Journal* 2012
Quaglio GL, Demotes-Mainard J, Loddenkemper R.

2.6. Domain 5: Science, technology and innovation policy

Highlights

The STOA study 'Science Metrics: measuring scientific performance for improved science policy making' examined how the inputs, outputs and impacts of research could be evaluated more effectively. This is particularly important as the EU increases research spending and awards funding through 'Horizon 2020'. The study advocated the development of a European research information e-infrastructure and a trans-national system for an overarching view of research performance data. This would sit on top of national research information systems in Member States, which European policy could help develop according to national needs while ensuring interoperability.

The workshop co-organised with the European Science Foundation, 'The science of innovation' on 28 February 2012, emphasised that innovation is not always good, and more innovation is not always better: too much innovation, for instance, might shorten the life-cycle of products, which is often not the objective. It also elaborated on many existing 'myths' in the innovation policy world.

Studies

- Towards an Intellectual Property Rights strategy for innovation in Europe, 2009
- Copyright in the EU - What next?, 2011
- Technology Across Borders - Exploring perspectives for pan-European Parliamentary Technology Assessment, 2011
- Knowledge transfer from Public Research Organisations, 2012
- Science Metrics - Measuring scientific performance for improved policy-making, 2014

Study-related workshops

- Technology across borders - Overview of existing (P)TA practices in Europe (29/06/2010)
- Increasing the impact of technology transfer from research (16/09/2010)
- Copyright in the Single Market (12/10/2010)
- Conference on pan-European Parliamentary Technology Assessment (pEPTA; 07/09/2011)
- Knowledge transfer from Public Research Organisations (29/02/2012)
- Improving research management for improving research outcomes (10/10/2012)
- Science Metrics in Europe - Policy needs and opportunities (26/03/2013)

Ad hoc events

- Astronomy and space sciences (24/05/2011)
- The Science of Innovation (28/02/2012)
- Materials for the 2020 challenges (10/07/2012)
- European Emerging Risk Radar Initiative: Matching the technology challenges of 2020 (06/11/2012)
- European innovation eco-system for generating value (10/04/2013)
- How to retain leadership in particle physics? (29/05/2013)

- The European landscape of research funding (24/09/2013)
- Financing and assessing large-scale infrastructure projects (26/09/2013)
- Responsible governance of science and technologies (19/03/2014)

2.7. MEP-Scientist Pairing Scheme

STOA works to forge connections between the worlds of policy and science, with the aim of increasing understanding on both sides. This is to enable policy-makers to better understand how scientific research is conducted and scientists to develop their awareness of the role of science in policy-making and how to interact with the political process.

Following the positive experience of an earlier collaboration with the European Commission on two rounds of the MEP-Scientist Pairing Scheme, STOA ran one more round of the scheme in 2011-2012. Twelve scientists were paired with thirteen MEPs. The Members involved had an interest in science and were members of relevant committees, while the scientists worked in fields matching the areas of focus of the Members and also had an interest in the policy-making process.

The scheme was a positive experience for both the MEPs and the scientists, allowing relationships of mutual trust to be established. If the scheme is run again, the format may be modified to allow for an increased focus on the dissemination of results, including presentations to the Panel and events in the European Parliament. There would also be an emphasis on extending the period of co-operation.

The full list of participants is below:

No.	MEP's Name	Scientist's name	Institution of the scientist	Subject of study
1	Fiona Hall	Dr Ida Westerberg	Swedish Environmental Research Institute, Upsala University	Issues of water resources in Central America in view of the impact of climate variability and change
2	Csaba Tabajdi	Dr Andra Blumberga	Riga Technical University (RTU), Latvia	Environmental protection and energy systems, energy efficiency in buildings
3	Teresa Riera Madurell	Dr Marco Alves	Wave Energy Center, Lisbon, Portugal	Hydrodynamics of wave energy and floating structures, mechanical engineering, climate change and renewable energy systems
4	Giles Chichester	Dr Delilah Al Khudhairy	Joint Research Center, Institute for the protection and Security of the Citizen, Ispra, Italy	Global Security and Crisis Management
5	Silvia-Adriana Țicău	Dr Lamine Aoud	Localisation Research Centre (LRC), University of Limerick, Ireland	High performance computing, Cloud Computing, analytics and data mining, digital forensics
6	Malcolm Harbour	Dr Andrea Saltelli	Joint Research Centre, Institute for the protection and Security of the Citizen, Ispra, Italy	Econometrics and statistical applications, the Internal Market and the knowledge economy; sensitivity analysis, physical chemistry, environmental science and applied statistics
7	Julie Girling	Dr Graciela Alvares	Cemagref (Institut de recherche pour l'ingenierie, de l'agriculture et de l'environnement), Antony (Paris), France	Environmental technologies, food safety
8	Marina Yannakoudakis			
9	Vicky Ford	Dr Patrik Jones	University of Turku, Finland	Biology and Biotechnology, biomass, biofuels, synthetic biology, energy
10	Kay Swinburne	Dr Julia Cordero	Beatson Institute for Cancer Research, Glasgow, UK	Oncology; pioneering experiments on the role of the immune system in tumour progression and invasion, regenerative medicine
11	Paul Rübzig	Dr Hermann Stamm	Joint Research Centre, Institute for Health and Consumer Protection, Ispra, Italy	Nanobiosciences, materials research
12	Ioannis Tsoukalas	Prof. Angelo Cangelosi	University of Plymouth, UK	Robotics, Artificial Intelligence and Cognition
13	Edit Herczog	Dr Stephanie Cornet	University of Manchester, UK	Nuclear Energy, nuclear waste, chemistry of radioactive elements

2.8. The STOA Annual Lectures

Every year, STOA hosts a prestigious Annual Lecture to allow Members and other guests to hear from scientists and experts at the very top of their fields, as part of its objective to create relationships between those in policy and science. The keynote speakers, often Nobel Laureates, address their subject of expertise, chosen also for their political relevance. Their speeches are accompanied by talks from other invited experts and policy-makers to provide a broad discussion of the topic.

The STOA Annual Lectures that were held during the seventh legislature are listed below:

'One web, free and open for all' (1 December 2009)

Sir Tim Berners-Lee, the inventor of the World Wide Web, spoke, as keynote speaker, about the latest developments on the questions of trust, security and privacy on the Internet. The lecture was preceded by a workshop on 'Trust and the web', which brought together academics, the Chief Information Officer of the Austrian government, and STOA Panel member Silvia-Adriana Țicău, to address in particular security, the role of governments and e-governance. The participants concluded that: Europe needed to take the lead with regard to identity and data protection; security had to be ensured for public e-services; and challenges remained before high-potential technologies, such as semantic and ontology-based approaches, could be used to redesign public services.

'Is an oil free future possible?' (7 December 2010)

Humans needed to decrease their reliance on oil for the good of the planet, argued Professor Paul Crutzen, Max Planck Institute, winner of the Nobel Prize for Chemistry in 1995. The huge growth in human population, urbanisation, industry, and energy usage over the twentieth century had resulted in man-made climate change and now greenhouse gas emissions needed to be reduced. Perhaps carbon dioxide could be captured from the atmosphere and converted into methanol for use as a fuel. This was suggested by Professor George Olah, University of Southern California and winner of the Nobel Prize for Chemistry in 1994, who spoke via video-link. It was now necessary, he said, to find new solutions to secure future fuel supplies.

'Sustainable Management of Natural Resources' (29 November 2011)

Improvements in global education are essential to achieve sustainability - this was the central conclusion reached in STOA's Annual Lecture in 2011. Among the speakers emphasising this issue was Professor Sir Harry Kroto of Florida State University, awarded the Nobel Prize for Chemistry in 1996, who recorded a video address and answered questions via Skype. The event closed with the award of the Sustainable Energy Prize to the Chipembele Wildlife Education Trust, Zambia, for their Conservation Education in Schools Programme that teaches Zambian children how to use knowledge not only to improve their own lives, but also the natural environment that supports them.

'Unlocking the mysteries of the universe at CERN' (27 November 2012)

In summer 2012, CERN, the European laboratory for particle physics near Geneva, found evidence that seemed to confirm the Brout-Englert-Higgs mechanism, a model which explains the mass of elementary particles. Peter Higgs, University of Edinburgh, and François Englert, Université Libre de Bruxelles, two of the men who predicted the existence of this particle in 1964, and later awarded the Nobel Prize for Physics in 2013, were the guests of honour for STOA's 2012 Annual Lecture. Attendees also heard from scientists currently at CERN and from Anne Glover, Chief Scientific Adviser to the President of the European Commission, about the power of science.

For the first time, a STOA event included a live Facebook chat, with Higgs and Englert spending an hour answering some of the over one hundred questions received.

'Sustaining sustainability: making economics work for the global environment'

(12 November 2013)

How can the challenges of sustainability be made into an opportunity for the economy? The keynote speakers agreed that new ways of thinking were needed. Monica Kircher, CEO of Infineon Technologies Austria AG, stressed that policy-makers needed to ensure education provided the skills necessary for sustainability. Ismail Serageldin, Director of the Library of Alexandria and former World Bank Vice-President for Environmentally and Socially Sustainable Development, called for a paradigm shift in economic thinking. He argued that high unemployment related to the current obsession with GDP, but measures that looked at 'Gross National Happiness' did not help with sustainable development. Hans Bruyninckx, Executive Director of the European Environment Agency, argued Europe should look beyond the 2020 agenda to focus on the 2050 agenda to create a low-carbon society, a circular economy and a resilient ecosystem.

2.9. Communication

Publications

The following reports are produced for each project:

- Full report (ca. 100 pages)
- Options brief (4 pages)
- In some cases, layman's summary (20 pages)

In addition, STOA produces:

- Newsletters
- Annual reports
- Workshop reports

These are available to all on our website: www.europarl.europa.eu/stoa/

Website and new media

Including:

- Video clips on YouTube
- Facebook chats
- Blog posts
- Tweets

3. A STOA strategy for the future

OBJECTIVES

- Build on experience to define a clear and effective strategy for the future, ensuring that STOA will continue to provide sound and relevant policy advice to Members.
- Ensure that STOA remains proactive and its products and working methods keep pace with rapid technological and political developments.
- Achieve optimal dissemination and awareness of STOA results and activities, reaching out to all Members, relevant scientists and the wider public.
- Implement the actions listed below for the achievement of these objectives.

ACTIONS

CONSOLIDATING STOA'S STRATEGIC ROLE WITHIN THE EUROPEAN PARLIAMENT

A mission for STOA: Science and technology foresight for agenda-setting

- Endow STOA with a clearly recognisable mission: STOA as the permanent structure of the European Parliament with an explicit *foresight role in the area of science and technology*.
- Firmly anchor STOA in the *agenda-setting* phase of the policy cycle.
- STOA could produce, using external expertise, a strategic technology foresight report at the beginning of every legislature and, with sufficient human resources, in-house updates later.
- If the committee responsible for research or other committees so wish, they may use the STOA strategic foresight report and its updates as a basis for regular own-initiative reports.
- Pursue synergies with the European Parliament's administrative research services, expecting their support, where necessary and compatible with their distinct missions.
- Promote relations with key European policy-making, research-funding and academic institutions (ERC, EIT, EUREKA/Eurostars, CoE/PACE, ENA) with the aim of building a science cluster based on technology options for 2050.

Consolidating STOA's role and recognising its work in practice

- Ensure STOA Panel membership is treated on the same footing as committee membership on all public EP records (e.g. EP website).
- Enhance substantially the visibility of the link to STOA on the committees' webpage.
- Actively encourage committees and other parliamentary bodies to commission work by STOA and then have it presented during prime time in their meetings.
- Actively promote the STOA mission among committees and Members.
- Identify focused, topical science and technology-relevant themes within the main mission.

ENSURING STOA PRODUCTS BEST SERVE PARLIAMENT'S NEEDS

Long-term programming of activities

- Keep track of the policy planning of the European Commission and the long-term views of the European Parliament and individual committees.
- Employ a good knowledge and understanding of the long-term policy framework to better assess policy options and optimally communicate the outcomes to policy-makers.
- Identify key topics early in the 8th legislature.
- Keep track of changing circumstances and adjust long-term plans accordingly, making a clear distinction between strategic and circumstantial targets.

Ensuring an optimal balance between long- and short-term projects

- Ensure an optimal balance between long- and short-term products favouring shorter timelines.
- Maintain a long-term view, while providing support on demand to committees and Members.
- Project execution to include frequent publication and presentation of short documents and the availability of STOA staff and external experts for personalised advice to Members.
- Adapt the topics, format and content of workshops to the current conditions of rapid communication, while embedding them in a long-term, albeit flexible, strategy.
- Set up a clear set of appropriate criteria for the selection of workshop topics and external collaborators compatible with STOA's priorities and optimally responding to EP needs.

OPTIMISING THE USE OF RESOURCES

Reinforcing manpower

- Considering staffing issues in a responsible and constructive manner, pursue modest adjustments, in line with those taking place in STOA's immediate surroundings.
- Optimise existing resources by pursuing mutually beneficial collaborations and synergies with other units with similar or complementary tasks within DG EPRS and the European Parliament.
- Make sure adjustments allow STOA to continue and improve its performance in key areas.

Optimising the balance between administrative and research tasks

- Consider ways of streamlining/simplifying the support the Secretariat needs to provide to Bureau and Panel meetings, and envisage capping the number of workshops, while concentrating efforts on ensuring quality and impact.
- Depending on the evolution of STOA's human resources, STOA Administrators could divide among themselves responsibility for technology areas and provide relevant advice to committees and Members, as required.

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