SCIENCE AND TECHNOLOGY OPTIONS ASSESSMENT NEWSLETTER

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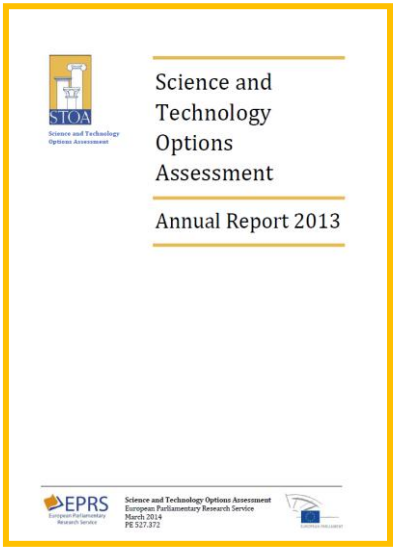
STOA Bureau (from left to right): Oldřich Vlasák, EP Vice-President; Malcolm Harbour, Second STOA Vice-Chairman; António Correia de Campos, STOA Chairman; Paul Rübig, First STOA Vice-Chairman



STOA ANNUAL REPORT 2013

The STOA Annual Report 2013 was approved by the STOA Panel on 13 March 2014 and presented to the Bureau of the European Parliament on 2 April 2014.

In 2013, STOA continued its activities on the main topics of:

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

Some major projects of this legislature, completed in 2013, were:

- Eco-efficient transport futures for Europe;
- Potential and Impact of Cloud Computing and Social Network Websites;
- The series of studies under the umbrella of 'Technology options for feeding 10 billion people', which was closed with the workshop 'How to feed the world in 2050?'

Most of the reports published in 2013 were accompanied not only by a four-page Options Brief, some also by a twenty-page Layman's Summary, in order to make the findings more accessible. Besides presentations of the study outcomes to the STOA Panel, in relevant Committee meetings and at public workshops in the European Parliament, some ad-hoc workshops were organised, which attracted a wide audience. Examples of these are:

- A dialogue in the Parliament on the IPCC report on the physical basis of climate change;
- State-of-the-art of Machine Translation: current challenges and future opportunities;
- Strengthening health protection in times of economic crisis;
- What does it mean to have a brain disorder? European Month of the Brain 2013;
- The European landscape of research funding.

The STOA Annual Lecture in 2013 on the theme of 'Sustaining Sustainability: Making economics work for the global environment' was dedicated to the challenges of sustainability and how they can be turned into an opportunity for an increasingly globalised economy at a time of crisis. The keynote speakers included Ismail Serageldin, Director of the Library of Alexandria, former Vice-President of the World Bank responsible for Environmentally and Socially Sustainable Development, Monika Kircher, CEO of Infineon Technologies Austria AG, and Hans Bruyninckx, Executive Director of the European Environment Agency (EEA).

Further, a number of STOA delegation visits took place in 2013, amongst others to the CEA (French Alternative Energies and Atomic Energy Commission) facilities in France and the Science and Technology in Society (STS) *forum* in Kyoto (Japan).

THE ENERGY STORAGE CHALLENGE: Which contribution from chemical sciences?

Outcomes of the workshop

The workshop panel

The workshop keynote speaker
Prof. Serdar Sariciftci

The challenge of security of energy supply is one the most critical issues that Europe is facing nowadays. Energy needs to be generated and stored in an environmentally appropriate and sustainable manner. Chemistry will have a crucial role to play in future innovative technologies and new materials that will, at the same time, save enegy and protect the environment.

The workshop, which STOA co-organised with the European Association for Chemical and Molecular Sciences (EuCheMS) on 11 February 2014 at the European Parliament in Brussels, presented two main possibilities to store energy that require the contribution and development of the chemical sciences:

1. physical devices, such as batteries or super-capacitors;
2. storage of energy from renewable energy sources in the chemical bonds of a compound, to release the stored energy at another time and place.

The event was opened by STOA Chairman António Correia de Campos and Prof. Ulrich Schubert, EuCheMS President, and featured speeches by Prof. Serdar Sariciftci from Johannes Kepler Universität (JKU) Linz, Prof. Gabriele Centi from the University of Messina, Prof. Neil Champness from the University of Nottingham, Prof. Ferdi Schüth from Max-Planck-Institut and Prof. Kristina Edstrom from Uppsala University.

In his keynote speech, Prof. Serdar Sariciftci outlined that one of the main problems of the European Union (EU) is the lack of energy resources and the fact that the EU is still strongly dependent on fossil fuels, which do not allow a cyclic system of consumption and release of CO_2 in the atmosphere, thus causing concerns among climatologists. Storage of solar energy is the next big challenge for overcoming the fluctuation of renewables. Furthermore, methane and methanol seem to represent a good energy vector for the future, thanks to the existing infrastructures.

According to Prof. Centi, who focused on solar fuel and artificial photosynthesis, it is essential to develop a radically different system that reproduces only some characteristics of the natural one. In particular, the devices of the future have to be smart, highly productive, cheap and robust.

Prof. Champness spoke about hydrogen and finding a way to store it in liquid form in a way that it can cope with all the different atmospheric conditions on the earth.

Prof. Schüth highlighted that the storage problem comprises all energy fields, such as mobility, heating and electricity, and that it is important to keep all the energy aspects in mind when dealing with storage.

Prof. Edström pointed out that batteries will play an important role in the future. The battery storage capacity depends on the chemical feautures of the material used to make them. The creation of new innovative materials will be crucial for making batteries with higher energy densities, longer lifetime and higher safety characteristics.

The workshop was concluded by Prof. David Cole-Hamilton, EuCheMS President Elect, who recalled that oil and gas are running out in 40-50 years and global warming is a reality. If it were possible to convert the power from the sun into energy at a 10% conversion rate, all the world's energy needs could be met by the sunshine falling on an area with the size of Libya. All types of energy (water, waves, biomass) come from solar energy conversion, but they are all intermittent. That is why energy storage is so critically needed. In his closing words, Prof. Cole-Hamilton stressed the fact that chemistry is developing the answers to the energy challenges of our days.

INTERVENTION TOOLS AND STRATEGIES TO IMPROVE HEALTH PROGRAMMES
The role of operational research in low and middle income countries

Outcomes of the workshop

Defining 'operational research' (OR) in public health is not easy. A pragmatic definition describes OR as research into strategies, interventions, tools or knowledge that can enhance the quality, coverage, effectiveness or performance of the health system, the health services or disease control programmes. By showing what works and what does not work in various contexts, OR can provide evidence to help policy-makers adapt health interventions and services in order to maximise public health benefit.

During a workshop held by STOA on 4 March 2014 at the European Parliament in Brussels, experts in the field of OR concluded that the EU should increase its support for this kind of research. STOA organised the workshop in collaboration with Médecins Sans Frontières, the International Union against Tuberculosis and Lung Disease and WHO-TDR, the Special Programme for Research and Training in Tropical Diseases of the World Health Organization.

The workshop participants outlined the critical gap which exists between the development of efficacious health interventions and their optimal delivery in real-life settings. This is particularly case in many low- and middle-income countries. OR could demonstrate how to introduce and scale-up such interventions, which could have a major impact on global health.

Since the funding possibilities for OR within health programmes are limited, participants discussed some possible solutions. They considered embedding research into national programmes and health systems as a way of ensuring cost-efficiency.

The workshop concluded that, while EU investment in research has been directed towards innovation, an essential part of the EU Framework Programme's mission, knowledge on how to implement new findings for maximum public health benefit is too often lacking and should be enhanced by complementary EU actions for OR-enabling social innovations.

STOA Chair António Correia de Campos and ITRE Chair Amalia Sartori opening the workshop

FINAL REPORT ON POTENTIAL AND IMPACTS OF CLOUD COMPUTING AND SOCIAL NETWORK WEBSITES

Cloud Computing and Social Network Sites (SNS) are among the most controversially discussed developments in recent years. The opportunities of using powerful computing resources on demand via the web are considered as a possible driver for the growth of the European economy. This project reviewed the latest technological and economic developments, identified driving factors and barriers in Europe, as well as the main actors and their respective interests, analysed the impacts on citizens, business (including the Information Technology (IT) industry itself) and public administrations, and evaluated a broad range of technical, economic, cultural, legal, regulatory issues and their impacts.

The recent massive surveillances actions and the rise of cyber crime showed the need for a more secure basis of future computing. Cloud Computing and SNS challenge the existing data protection regime. However, modernisations, such as the new draft data protection regulation, need to be continued and filled with life. Since trust is a pivotal success factor, the questions of third party access and data retention need to be addressed. The analysis of contractual relations showed that main contractual features, like jurisdiction, liability, service levels or acceptable use, still raise questions. A similar situation can be found for IT security-related issues. Finally, the analysis showed the need to address challenges to competitiveness, such as vendor lock-in or the lack of fast growing companies, as well as challenges in framewok conditions, such as market fragmentation, broadband penetration or skilled people.

The project identified sixteen policy options corresponding to four major themes:
Theme I: Make security a commodity;
Theme II: Establish privacy as a location advantage;
Theme III: Build a trustworthy environment for digital business and living;
Theme IV: Create an inspiring ecosystem for ICT industries.

EPRS
European Parliamentary Research Service

25 years at the service of European policy making
Science and Technology Options Assessment
STOA

STOA (Science and Technology Options Assesment) is an official body of the European Parliament, whose task is to carry out expert, independent assesments of the impact of new technologies and identify long-term, strategic policy options useful to the Parliament's commmittees in their policy-making role.

STOA Management

STOA's policies and objectives are overseen by the **STOA Bureau**, elected by the **STOA Panel**, which is **composed of 15 MEPs**, including the EP Vice-President responsible for STOA and 14 MEPs appointed by **six Parliamentary Committees**.

With the exception of the Committee on Industry, Research and Energy, which appoints 4 Members, each of the following committees appoints 2 Members:

- **Agriculture and Rural Development;**
- **Employment and Social Affairs;**
- **Environment, Public Health & Food Safety;**
- **Industry, Research and Energy;**
- **Internal Market and Consumer Protection;**
- **Transport and Tourism.**

With the inputs of Committees and individual Members, the STOA Panel, on the recommendation of STOA Bureau, decides on STOA projects and other activities.

Each STOA project is supervised by one or more Panel members.

The **STOA Bureau** is comprised of four Members:

- **Oldřich Vlasák**, EP Vice-President responsible for STOA
- **António Correia de Campos**, STOA Chairman
- **Paul Rübig**, 1st STOA Vice-Chairman
- **Malcolm Harbour**, 2nd STOA Vice-Chairman

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