

Science, Technology and Society in Europe

April 2015

volta⁰⁸



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every day a greenday?

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Editorial

Consumer awareness has changed radically in the last few decades. We have become more sensitive to the potential impact on the environment of our consumer choices, and that our health and wellbeing can be tied to the environment. Our cities are less polluted; we recycle plastic, paper and glass (or at least we try to).

But we are not consuming less.

The special report for this very last Volta covers sustainable consumption. It's an issue that relates to several of the grand challenges of the Lund Declaration, including global warming, energy resources and public health. Yet efficient policy measures against unsustainable consumption seem to be problematic: consumption is an area where values and aims are confronted.

The combination of conflicts and dilemmas, a well-documented scientific knowledge base, and a clear need for political action, led to the recent Europe Wide Views citizen consultation on sustainable consumption, organized by the PACITA project. Citizen views are crucial in the policy-making agenda. In the end, it is the ordinary citizen who has to live with the consequences of consumption policy. Nine policy recommendations emerged from the consultation and it was clear citizens wanted European politicians to set a more ambitious agenda, and to perceive citizens as collaborators.

It is clear that consumption patterns will need to undergo a societal shift if we are not going to jeopardize the quality of life for generations in the future. But it won't be brought about by policies alone.

At the closure of the PACITA project, I would like to thank our loyal Volta readers and our dedicated international editorial team. It has been a great joy to produce this magazine with - and for you. On page 16, project leader Lars Klüver will inform you about the results of the four years of European parliamentary technology assessment.

Antoinette Thijssen, on behalf of the editorial team.

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Resource Hunger

A sustainable economy is top of the agenda for many European countries. But what of the natural minerals and resources required to fuel it?

Policies for a resource hungry world

Minimum economic, environmental and social sustainability standards need to be set to meet Dutch and European natural resources policies, according to a new report from the Rathenau Instituut. They must meet a triple bottom line of people, planet and profit.

The strategies needed to reach those policy goals (faster), is the focus of *Sustainable alleviation of resource hunger* (2015). Challenges and opportunities for resource policies are addressed in the context of ambitions to create a circular economy in which resources are used efficiently and the least possible amount of waste is produced. The report also covers geopolitical implications, case studies on indium and tantalum – metals used in the electronics industries – and resource activities in China and Africa.

Making sustainability economically viable (making recycling profitable, for example) is an important element in the recommendations that were made to Dutch ministries in the report: “Sustainable resource policy is policy that does justice to this relationship between people, planet and profit. In order for the use of natural resources to be sustainable, the prevention of serious harm to the environment and human rights violations must first be profitable.”

Sustainable alleviation of resource hunger – Management summary. Krom, A. & A. van Waes (2015), Rathenau Instituut, The Hague, the Netherlands.

Civilian Drones

More unmanned aircraft are taking to the skies. What are the challenges?

Unmanned aircraft – popularly known as drones – are becoming more affordable for civilian applications. But there is a ‘notable concern’ related to their use when equipped with cameras, according to a recent briefing from the UK Parliamentary Office of Science and Technology. “The biggest challenges for civilian UA are safe and effective integration with other users of airspace, including how they are controlled by users, as well as insurance and privacy.” National and international aviation bodies currently regulate airspace, but civil liberty organisations such as Big Brother Watch, cited in the report, are remaining vigilant: “The dangers of hyper-intrusive surveillance technology becoming increasingly accessible cannot be understated.”

POSTnote 479 - 2014, www.parliament.uk/briefing-papers/POST-PN-479/civilian-drones



Coming up

Framing the Future

Story-telling, citizen science and the developing scene for science communication events are all on the agenda of the European Science Event Association 2015 conference in the newly restored Yugoslav Film Centre in Belgrade. Those that arrive early can take part in a Tesla tour in honour of the Serbian-American inventor Nikola Tesla (1856-1943).

www.eusea.info/eng/About/Annual-Conferences/EAC15-Eusea-Annual-Conference-2015
Eusea 2015, Belgrade, Serbia
20-21 May 2015

Policy making in the big data era

Researchers, policy makers, practitioners in industry and all other stakeholders will explore the latest developments and potentials in policy-making processes at this conference hosted by the University of Cambridge. Topics will include information and evidence in the digital age, policy-making mechanisms and security and privacy issues, including ethics and law.

www.dataforpolicy.uk
Policy making in the big data era: opportunities and challenges
Cambridge, UK, 15-17 June 2015

Science communication

A two-day conference for all those who work in public engagement with science. An opportunity to share new ideas, address key issues and forge new links with a diverse group of those involved at many different levels. The Science Communication Conference is organised by the British Science Association in partnership with the Wellcome Trust.

www.britishtscienceassociation.org/science-communication-conference
Science Communication Conference 2015, Manchester, UK
18-19 June 2015

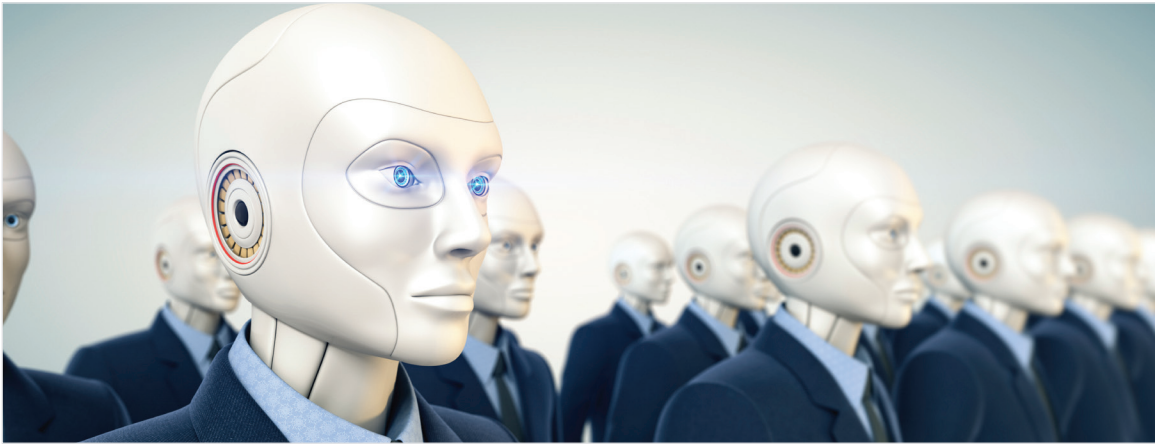


Photo:
iStockPhoto

Jobless growth?

Affordable robots, autonomous cars, we're living in a second machine age according to a report on technical trend and productivity. But will we still have jobs?

Zillow, Uber, and Airbnb are changing the traditional business models

A crucial issue for all economies is how to take advantage of technological developments without raising the unemployment rate.

The financial crisis in 2008 and the following economic recession have put productivity on the agenda as the central driving force of growth in the world's economies. During the following years, few countries have been able to fully regain lost momentum, but there are signs of new technological and organisational innovation and a renewed interest in industrial policy and policy measures for advanced manufacturing.

In the report, *Productivity in Europe and the United States* from the EPTA (European Parliamentary Technology Assessment) network, it is possible to compare and contrast policies in different countries and their policy initiatives. What is the thinking behind Industry 4.0 in Austria, for example, or the Digital Agenda in Germany? How do the UK's catapult centres work or the Danish productivity commission? And what about the impact of robots in the Netherlands?

Each EPTA participant has written their own contribution, which covers the national situation at a glance, an analysis of the productivity challenges together with details of their technology trends and policy initiatives. Charts showing economic data such as the change in a country's GDP compared to the EPTA average, for example, or in comparison

with other countries, are also included in many national profiles.

The report is a joint effort from 15 EPTA members and observers with a template contributed by the Norwegian Board of Technology, who held the presidency for EPTA in 2014 and who also edited the report: "By describing challenges and policies, in different countries and regions, we hope policy makers will be aided in their efforts to develop effective strategies for the future."

The report also provides an opportunity to compare notes with the United States with information provided by the US Government Accountability Office (GAO). They note that in sectors where traditional business models have been overturned, there will be jobs in the future, but they will be different jobs: "ICT-enabled businesses such as Zillow, Uber, and Airbnb are respectively changing the traditional business models of how we find houses to buy, get rides around town, or rent apartments. These new ways of doing business promise economic growth and also provide employment opportunities, but potentially in different ways than previously expected."

Read More?

Productivity in Europe and the United States - Technology Trends and Policy Measures

EPTA, October 2014

<http://teknologiradet.no/english/norway-2030/new-report-on-productivity-in-europe-and-the-u-s>

Policy makers must be more ambitious, say citizens

Sustainable consumption

Text:
Marianne Heselmans
Photos:
iStockphoto, Jordi Pareto

Governments are wary of efficient policy measures against unsustainable consumption because they address the values and aims of ordinary citizens. But perhaps citizens are more willing to change than governments think?

‘Citizens want to buy less-polluting products and reduce their consumption. But they also want to play an active role in grassroots activities: sharing cars, organising local food initiatives or participating in renewable energy cooperatives.’

Sustainable consumption is not an issue that can solely be left to the market. According to a pan-European citizen consultation held in October, EU citizens are strongly in favour of policy-makers taking ambitious steps. And they themselves want to play an active role.

Our consumption is not sustainable. We consume too much meat. We live in big houses. We drive in energy-guzzling cars. We buy - and throw away - newly made clothes, mobile phones, laptops and other fashion-sensitive goods only to buy more of them.

Our ecological footprint (a measure in which resource use is translated to land use) is twice the area of the EU. Since the 1960s, meat consumption has almost doubled and stands at a global average of 42 kg per person per year, with the highest consumption in the US and Europe. Around one third of marine fish stocks are overfished. Annually, the EU creates six tons of solid waste



per head of population. And by 2020, the EU will produce an estimated 12 million tons of electronic waste every year.

Certainly many of us know that our consumption habits have led to environmental problems, not only in our own countries in Europe but elsewhere in the world. Dutch people know that the Brazilian soy for their pigs stimulates deforestation in the Amazon basin. Germans know that the copper mining for their car industry leads to soil pollution in Africa. So yes, EU-politicians have formulated that by 2020, they would like to reduce greenhouse gas emissions by 20% and are their policy is directed towards a circular economy in which nothing is wasted. But what role should we citizens play in addressing sustainable consumption?

What is sustainable consumption?

At the Norwegian Ministry of Environment, Oslo Symposium 1994, sustainable consumption was defined as: “The use of services and related products, which respond to basic needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the needs of future generations.”

<http://citizenconsultation.pacitaproject.eu>

What citizens are willing to do was the focus of PACITA’s consultation project *Europe Wide Views on Sustainable Consumption* that ended in March. A second question was what citizens expect from EU politicians. Do they expect stricter rules that force their own consumption patterns into the direction of a circular economy? Or are they in favour of a free consumption market, in which politicians only restrict companies?

Significant answers

The answers to these questions are significant. Generally, governments are hesitant to intervene too much in the private space of their citizens. As a result, policies tend to be focused on the production of goods and services rather than on private consumption. So adding the perspective of citizens – what responsibilities do they want to take – could offer new understanding.

According to the final report *Europe Wide Views on Sustainable Consumption*, citizens want policy-makers to take more ambitious steps. And they want to be involved.

“I was surprised that citizens assign such a big role to themselves”, says project coordinator Marie Louise Jørgensen from The Danish Board of Technology Foundation. “Citizens want to buy less-polluting products and reduce their consumption. But they also want to play an



active role in grassroots activities: sharing cars, organising local food initiatives or participating in renewable energy cooperatives. At the same time, they want EU politicians to make it easier for them to be more sustainable, especially through financial incentives and awareness-raising campaigns.”

Super Saturdays

The insights from consultations such as these can inform the policy making process: the organisers drew nine conclusions (see box) mainly from the PACITA cross-European citizen consultation held on Saturday 25 October 2014. Throughout that Saturday and the weekend before (two meetings took place on 17th and 18th October), 1,035 citizens simultaneously gathered in halls in 11 EU-member states. There they deliberated with fellow citizens and voted on issues such as: How to reduce the consumption of mobile phones? How to shift to a more sustainable diet? How to reduce plastic waste? The citizens, about 100 per country, came from Catalonia, Austria, Ireland, Lithuania, Portugal, The Netherlands, Wallonia (Belgium), Denmark, Czech Republic, Bulgaria and Hungary.

The results of voting on 27 questions were published on the PACITA site immediately after the meeting. There you can see all the answers to all of the questions. For instance: 66% participants indicated that the individual citizen should take the main responsibility in striving for a more sustainable consumption, ahead of (on 40%) national politicians and governments. 78% of citizens want the EU to strive for an economy in which no waste is produced. Only 2% think that this path should be left to the free market.

One third of citizens want to play an active political role, and almost all citizens want to reduce their consumption. However, the EU should make this behaviour easier for them. For instance, it is difficult (and costly) to repair mobile phones, computers and printers. It is often much cheaper to buy a new one. Almost all participants (96%) want the EU to make policies that increase the durability of products. Two thirds opt for increasing mandatory guarantees and enforcing higher manufacturing standards. Politicians can also increase the availability of spare parts and make repair cheaper. And they can label products to reflect the durability – 27% chose this option.

Awareness campaigns can help

Awareness campaigns and education can also help, according to the voters. In order to reduce the total amount of food being wasted, 66% of the citizens chose raising awareness as the best way to prevent this kind of waste. Salads, apples, cornflakes, chocolates - citizens tend to buy more than they need if the food is cheap and looks good. “So they need better information about food production to reduce their consumption, and thus diminish food waste,” confirmed Ladislav Miko, Deputy Director for the food chain, DG Sanco during the consultation on 25th October in Prague. But this is not easy, he added. “Labels and information must make sense.”

All meetings on Saturday 25th October followed the exact same schedule: A head facilitator led citizens through four thematic sessions. Before each of the discussion rounds, there was a short film showing policy scenarios on topics such as eating less meat, reducing food waste or recycling natural resources. (The films can also be found on the PACITA site).

Citizens were divided into groups of 6-9 people. At every (round) table, a trained and un-biased facilitator moderated the deliberations, making sure that all participants received enough time to listen to other opinions. After each round, all participants filled out a questionnaire and answer questions such as ‘Which policy measures should the EU implement to stimulate sustainable consumption?’ Or ‘Which economic measures to increase the sustainability of transport are acceptable to you?’

‘If change is what’s required, who do citizens think should take control of that process and how should they go about it?’

The Danish Board of Technology Foundation and the World Wide Views (WWV) Alliance are the developers of this methodology. In 2009, before the Copenhagen Climate Change Conference COP15, 4,000 citizens in 38 countries took part in a project about global warming, and in 2012, 3,000 citizens from 25 countries discussed and voted on issues relating to biodiversity in connection with the convention on biological diversity (COP11). “There are more cross-country consultations resulting in quantitative information”, explains Marie Louise Jørgensen. “Our method’s advantage is that citizens get time to reflect on the answers, before they fill out the enquiry. They get balanced information and the opportunity to deliberate for a full day, which give rise to well considered responses.”

However, the method is time-consuming, Jørgensen confirms. One of the conundrums concerned the information that should be included in the leaflets and videos. EU countries differ culturally and in their concern and awareness of environmental problems and policy issues. East-European countries are in general less aware of sustainability issues than North-European countries. But they all had to receive the same information. Added to that, the questions and their answers needed to be relevant for EU-politicians and policy-makers. To come up with relevant issues for all participating citizens and for policymakers, the organisers talked with tens of stakeholders.

Public transport is tragic

Cycling is sustainability in a nutshell: flexible, healthy and clean. Also buses, trains and trams require fewer infrastructures and less land and less oil resources than private cars. However, car use is the consumption field that the fewest number of citizens would be prepared to reduce. Less than 5% as compared to the 32% who indicate that they would reduce their food consumption.

“Public transport is tragic”, one Lithuanian citizen said on 25th October. “No one is going to separate me from my car.” Without efficient public transport, it is no wonder that 37% of the Lithuanian citizens prefer to use their private car when travelling distances up to 10 kilometres. By comparison, only 19% of Catalan participants preferred the car for this short distance. But they had reasons to complain too, according to the qualitative reports that were made from all group-discussions: “Sometimes I have to take my car since there are no cycle lanes”, one Catalan citizen said. “And I can’t use the train because they are not frequent enough.”

Citizen selection

Woodworkers, teachers, housewives, retired managers, and policemen - the citizens that were selected by the partner organisations in the 11 countries came from all kinds of professions. To ensure the reliability of the results, partners followed a set of guidelines on selecting participating citizens including that they should be lay-people. And that they should not be working professionally with sustainable consumption. Citizens also needed to reflect the distribution of the general population in the country with regard to age, gender, occupation, education and geographical zone of residency (i.e. city or countryside).

Based on reports from national partners, the recruitment of citizens has been effective, albeit with some variations. Some partners found it particularly difficult to recruit participants with lower levels of education. A tendency towards over-representation of highly educated citizens can thus be seen in some countries.

Countries where several languages are spoken presented cost issues. In Belgium, for example, the main language in Wallonia is French while in Flanders it is Flemish (Dutch). The organisers only recruited the French-speaking citizens. “We considered organising a consultation in two languages”, explains Benedikt Roskamp from the Université de Liège. “But a panel in two languages would go beyond our mandate and be too time-consuming and expensive.”

How different in the Netherlands and Denmark, with their dense and well-organised railway systems and long and lovely cycling lanes. Their views with regard to more sustainable transport consumption are interesting for comparison. While only 19% of all participating EU citizens preferred cycling when travelling distances up to 10 kilometres, 60% of the Dutch and 36% of the Danes chose this option. “The good infrastructure for cyclists in these countries may be one explanation for their noticeable preference for cycling”, the final project report concludes. “If policymakers want to promote a similar preference among citizens in other countries, they should provide better infrastructure for cyclists.”

Subsidies and taxes

“If you have money, you can afford to buy healthy products”, a Hungarian citizen said in Budapest. “But if you don’t, you’ll have to do with the low-quality things that are available to you.” Some 1,300 kilometres away in Utrecht, a Dutchman noted that: “At Albert Heijn (Dutch supermarket), the organic and regular potatoes were equally priced this morning. You could see that the clients bought the organic products.”

‘Sustainable Consumption is an issue that needs strong scientifically based actions, but also involves difficult choices and dilemmas for the individual citizen and potential consumer.’

Price appeared to be a bottleneck in choosing the more sustainable product when shopping for groceries. Almost half of the participating citizens indicate that cost is a main incentive when choosing a food product, while a quarter focus first on high sustainability standards. But that does not mean that all citizens want the public authorities to make sustainable consumption cheaper and to increase the price of products with negative sustainability impacts through subsidies and/or taxes. Only half of them (52%) voted for this option.

There seemed to be notable differences between countries on using financial incentives. More than two-thirds of the participating Hungarians and the Catalans prefer this policy instrument, compared to one-third of the Bulgarians and the Portuguese.

But the results are sufficient to suggest that financial incentives are effective instruments to encourage change in citizen consumption patterns, according to Marie-Louise Jorgensen: “Both the quantitative and the qualitative results indicate that citizens support financial stimuli over punishments, bans and sanctions. They

prefer to be encouraged rather than obliged to do something.” To cite one Portuguese citizen: “Governments should create tax benefits for sustainable agriculture and financial benefits for firms that use renewable energies to lower prices. That would motivate citizens to use it.”

Least popular was increasing the price of ‘unsustainable’ products. Only one quarter preferred higher taxes for polluting vehicles compared to less-polluting ones. And the qualitative reports reveal that many citizens Europe-wide are concerned about the social imprint that the use of taxes will leave on society, so it is only well-off citizens who will benefit from the use of this policy instrument.

National differences

Countries differed most in their outcomes when it came to enforcement of behaviour. For instance: 21% of all European participants agreed with the statement: ‘Prohibit campaigns like *buy 3, pay for 1*’. However, 45% citizens agreed in Lithuania compared with only 15% of Danish citizens.

To address national differences, and to involve national politicians in the debates, the local organisers could add qualitative, country-specific information on the basis of the debates. This is the reason why three countries organised a ‘national session’ after the main consultation using the outcomes of questions in order to formulate clear and short policy recommendations.

One of these countries was Austria. The Austrians formulated 16 recommendations for their own country. “Our national session was very effective”, said Leo Capari, one of the organisers. “Every group of 6-9 citizens had to formulate one recommendation, based on the outcomes of the voting. In this way, the participants could add qualitative information to the quantitative results.”

These recommendations varied from ‘Give less priority to economic growth’ and ‘Aim more for sustainability’, to ‘More teaching of ethics and sustainability in schools’. Other recommendations were ‘Improve product labelling’, ‘Restrict the rules for advertisements’, and ‘Be more transparent on the Transatlantic Trade and Investment Partnership (TTIP)’ – an upcoming agreement with the US. Two citizens were invited to present the results to the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management. Parliamentarians Petra Bayr and Matthias Kochl who attended as speakers, have reported on the results to their parliamentary committees.



“We cannot promise that politicians and policy-makers will follow our recommendations”, says Marie-Louise Jørgensen from The Danish Board of Technology Foundation. “But we expect that many of them will at least take note of the results.”

The nine recommendations were scheduled for debate on the 17th March during a Policy Conference at the BIP in Brussels. The debate intended to use the project results as the point of departure with discussions on the prospects for citizen participation in the EU. Included in the panel were Hugo-Maria Schally, Head of Unit of Eco-Innovation & Circular Economy from the DG Environment and Petr BlizKovsky, Director of Directorate 1 – Agriculture, Council of the European Union.

Sustainable EU economy

The project results may be relevant for a number of EU-initiatives, Jørgensen explains. A key initiative at the moment is the EU’s growth strategy until the end of the decade: Europe 2020. Part of that initiative is the ‘Roadmap to a Resource Efficient Europe’, which outlines how Europe’s economy could be transformed into a sustainable economy by 2050. Another initiative is the ‘Action Plan for Sustainable Consumption and Production (SCP)’, which aims to ensure a leading role for the EU in terms of environmental performance. Also many of the Horizon2020 research programmes are aimed at a more sustainable society and can thus use the outcomes.

The debate in Brussels is the final project step, but the programme coordinators have involved policy-makers in a number of ways to make the results relevant for them. They were interviewed before the compilation of the leaflets and the information videos. And they were invited to introduce the citizen consultations on 25th October, including Deirdre Clune, Group of the European People’s Party from Ireland and Kstutis Treiokas, Minister of Environment of Lithuania.

EU Climate Commissioner Connie Hedegaard stressed the project’s relevance in Copenhagen. “How we, together with citizens, can develop a more sustainable consumption is one of the most challenging issues for politicians now”, she told the participants. “Bans, tax incentives, labelling, awareness campaigns. How far can we, politicians, go in interfering in the behaviour of citizens? I would not like to live in a society where only the politicians tell us how to make our consumption more sustainable. So these debates with citizens are extremely useful.”



Catalan citizens in consultation

The only options currently available for citizens to get involved in European policy-making are the EU Commission's Citizens' Initiative and via projects in research programmes. Many knowledge institutes are experimenting with citizen participation in science, research and innovation. But for many partners, this kind of engagement is quite new. This was another goal of the PACITA project: it aimed to expand citizen participation processes to countries with little or no experience of citizen participation as a policy consultation practice with opportunities to learn from the more experienced ones.

"It is too early to say if this project will result in more citizen dialogue in countries with less experience in citizen participation", explains Marie-Louise Jørgensen, "but our experience shows that these kinds of projects build capacities in participatory processes and also open up the political interest in citizen engagement which results in more citizen dialogue. I think we would also see this in the aftermath of this project."

If it was up to the participants, EU politicians should have more citizens' consultations in all these countries because participants were remarkably positive about the day and the information they received. Of the 1,100 people who filled out the questionnaire, 67 % said their view on sustainability had positively changed: almost 90 % would participate again and 96 % want more of such European dialogues in the future. On the statement: 'There should be European dialogue processes like Europe Wide Views in the future', 69.20% 'strongly agreed' and only 0.1% 'disagreed'.

According to the final report, 'The wish for more European dialogue processes suggests this project has given the citizens a taste for more engagement in the future'.

9 options for policy makers

1

Set an ambitious European agenda to achieve a more sustainable consumption

2

Do not leave sustainable consumption solely to the market

3

Perceive citizens as collaborators in striving towards sustainable consumption

4

Make sustainable consumption cheap and easy

5

Use financial incentives to make it more attractive for citizens to change their consumption patterns

6

Provide better eco-efficient alternatives to conventional car transport

7

Ensure longer durability of products

8

Raise awareness & educate citizens on how to consume sustainably

9

Engage European citizens in dialogue processes in the future

Read More?

Europe Wide Views on Sustainable consumption is the last of three example projects held in the four-year PACITA project.
<http://citizenconsultation.pacitaproject.eu>

European Citizens' Initiative

Launched in 2012, citizens can invite the EU to propose legislation (accompanied by 1 million signatures from at least 7 EU countries)

<http://ec.europa.eu/citizens-initiative/public/welcome>



Digging Deep

Ethics, energy and techno-scientific trends are subjects requiring big thinking from policy makers. What are the limits for biotechnology? Or environmental risk? Can we build legislative pathways to the future?

Text:
Ann Maher

Ethical Dilemmas

Do the promises of nanomaterials outweigh the risks? What are the limits of biotechnology? How do we involve citizens in the development of controversial technologies? During the international project Global Ethics in Science and Technology (GEST) the Rathenau Instituut and partners in the United Kingdom, Germany, India and China examined how these different countries deal with ethical questions about science and technology. Here is a chance to compare thinking and learn from each other. The book *'Science and Technology Governance and Ethics'* (2015) is available open-access.

www.rathenau.nl/en/news/alle-categorieen/2015/02/nieuw-boek-science-and-technology-governance-and-ethics.html



Photo courtesy
of Springer

Energy from the earth

Switzerland's Energy Strategy 2050 requires energy efficiency to be substantially improved, the proportion of fossil fuels in the energy supply to be considerably reduced, and nuclear power to be phased out, while meeting highly ambitious climate protection targets. One of the core implications is the need for a massive increase of the use of renewable sources for electricity generation. Deep geothermal energy is subject to major uncertainties: how much can be exploited and at what economic cost? With this study, TA-SWISS aims to provide answers to these questions in a comprehensive and balanced way to provide a sound basis for stakeholder decision-making.

Energy from the Earth: Deep Geothermal as a Resource for the Future? Stefan Hirschberg, Stefan Wiemer, Peter Burgherr (Hrsg.) TA-SWISS (2015)

www.vdf.ethz.ch/info/showDetails.asp?isbnNr=3654

Scientific Foresight

"Foresight is an approach for studying possible consequences of our actions. Foresight is not about predicting long-term possible alternative futures, but about studying them in order to enhance people's reflexivity about what consequences theirs and others' actions could entail". The first study from the EP Scientific Foresight Service aims to strengthen the European Parliament's capacity to carry out scientific foresight. Techno-scientific innovations are often designed to make our lives easier, or to solve societal issues but also pose unwanted and unintended impacts. This methodology offers the Members of the European Parliament legislative pathways to anticipate possible impacts of techno-scientific innovations.

In-Depth Analysis: Towards Scientific Foresight in the European Parliament. Lieve Van Woensel and Darja Vršaj Scientific Foresight (STOA) Unit

[www.europarl.europa.eu/RegData/etudes/IDAN/2015/527415/EPRS_IDA\(2015\)527415_REV1_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/527415/EPRS_IDA(2015)527415_REV1_EN.pdf)

Actively engaged

The seven grand challenges of the 80 billion euros Horizon2020 research program, from food security to climate change, will need input from all of society if they are to be addressed effectively. In Engage2020, citizens have their say.

‘Public engagement is a pivotal element in the search for new forms of governance to meet complex challenges.’

Responsible research and innovation (RRI) has been introduced as a cross cutting theme for European research and innovation activities in order to deal with the grand challenges set out in the Lund Declaration of 2009. One of the core elements of RRI is the emphasis on democratic governance. The general public has an important role to play in the forming of research agendas and policy. There should be reflection and engagement from a broad group of social actors, not just the research community. The EU-funded project Engage2020 aims to ensure public engagement can become an integral part of research and innovation activities in the future.

Lars Klüver from the Danish Board of Technology Foundation and coordinator of the project, explains the importance of public engagement: “The grand societal challenges of today can’t be solved by a technocratic approach. Public engagement is a pivotal element in the search for new forms of governance to meet these complex challenges”, he argues. “Engaging the public in research and innovation will strengthen the relevance and acceptance of proposed policies.”

Methodological guidance

One of the results from Engage2020 will be an action catalogue - a database consisting of more than 50 commonly used public engagement methods. Klüver is hopeful that this will inspire and help actors who want to engage the public in their activities.

Examples of public engagement in action include World Wide Views, a multisite citizen consultation on political issues. The first was organized in 2009, on the topic of climate change. Over 4,000 citizens around the world gathered in their home countries to discuss the core issues being dealt with at the UN negotiations on climate change. World Wide Views have also been sought on biodiversity, and the World Wide Views on Climate and Energy will take place in June 2015. This worldwide participation addresses the complexity of challenges related to energy and

climate change – no country can deal with this on their own, or from within one specific research sector. International, transdisciplinary cooperation between broad groups of actors is what is needed. Other examples include science shops, which act as intermediaries between researchers and civil society, and citizen science where ‘ordinary’ people play an active role in research by asking questions or collecting data for a scientific project.

Engaging the public can serve a variety of desired outcomes. In the WWV approach, the results are well suited for defining the conditions for R&I activities. Other methods are better suited for project definition or engaging the public directly in research activities, by providing empirical data for researchers or to clarify normative issues in the scientific process.



An important step for the Engage2020 project was taken in January 2015, when more than 100 representatives from the European Commission participated in a training workshop in Brussels. “This workshop was a real milestone for the project”, explains Lars Klüver. “It gave the participants a unique opportunity to learn about public engagement and together with experts in the field, they discussed how public engagement can be embedded in research activities dealing with the grand challenges.”

Engage2020 will continue its work throughout 2015.

Text:
Marianne Barland

Read More?

Engage2020
<http://Engage2020.eu>

Implementing RRI in Horizon2020
<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovatio>

Public engagement in RRI
<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/public-engagement-responsible-research-and-innovation>

Lars Klüver on policy-oriented
Technology Assessment:
It's not just the science



‘With knowledge-based policy you take into account the knowledge, experience and values of other stakeholders. If you take that out of policy, you're doing the wrong thing.’

With the conclusion of the four-year PACITA project, what does the future hold for the role of Parliaments and Civil society In Technology Assessment?

"Hopefully there will be a PACITA2 to further expand the European Technology Assessment (TA) landscape and build up TA-capacity in the member states," suggests Lars Klüver, coordinator of the PACITA program. "Apart from that we also need a platform for cooperation between national TA institutes for training and education, and to utilize each other's knowledge and expertise."

In daily life, Lars Klüver is director of the Danish Board of Technology Foundation. Until 2012, the DBT was a technology assessment organisation funded by parliament, but following an election, became a victim of austerity measures - a 'political traffic accident', as Klüver phrases it. It has now become an independent foundation. Although Klüver sees an advantage in being able to operate independently, the disadvantage is the constant search for funds because structural funding from parliament is no longer available. "It shows that parliamentary TA is vulnerable. You're a hot potato, tossed between science and politics, dealing with controversial issues. That is why it is so important that TA is institutionally anchored."

Pretty naive

When PACITA started up, seven of the participating countries did not yet have institutionalised TA. One of the goals of PACITA was to anchor TA institutionally in those countries. That has not happened yet.

Klüver: "It would be pretty naive to think that you can make that happen in four years time, but things are moving in the right direction. In Wallonia and Portugal, the creation of a TA organization is very close, in Austria the relation to the parliament has been considerably strengthened, and in other member states it has become a topic of discussion in national parliaments. In general, TA is taken seriously in all participating countries where it has not been institutionalized up to now, so you can say that things have improved considerably since we started."

Better than expected

Klüver was concerned that the involvement of the established TA-institutes might be seen as patronising – although there was fairly broad agreement on the importance of TA – since there's a world of difference between expressing good intentions 'at a fairly abstract level', and then carrying them out. But it turned out better than expected: "There was a huge need for discussion on TA and how you could institutionalize it."

Would that be the 'classical' model, that is, a TA institute that is strongly linked with parliament?

Klüver: "No, much wider. You have to realize that not all the parliaments in the new member states are well-established yet. That's why people are also

looking at other models than parliamentary TA, more specifically at policy-oriented TA. At first that surprised me a bit, but if you think about it, we also see that kind of development in the 'old' member states. If you have to describe how we operate currently, it is better covered by the concept of policy-oriented TA than with parliamentary TA. You can see that in the models we use such as 'expert', 'stakeholder' or 'citizen' based TA. These go beyond merely supporting parliament in its control of government because the results of these TA projects are also – especially - useful for policy development."

One of the objectives of PACITA was for participants to learn from each other. What obstacles have you encountered, considering the differences between the organisations in the project?

'Current TA models go beyond merely supporting parliament because the results of these TA projects are especially useful for policy development.'

Klüver: "A really big problem that didn't have anything to do with the differences between the partners, was that PACITA started in the middle of the financial crisis. Not exactly a good time for establishing new institutions because there were heavy cuts in public spending. As I said before, it is rather naive to assume that a seed that you plant today will be a tree tomorrow but the financial crisis made it even more difficult for the seed to become a sapling."

Another obstacle was that it is not easy to explain what TA is. "It is about complex processes and often about social controversies and you cannot convey that in one or two sound bites". Instead of pursuing academic philosophical discussions about TA, PACITA chose instead to execute a number of projects: Public Health Genomics as an example of an expert-based approach; The Future of Ageing as an example of a stakeholder approach; and Sustainable Consumption as an example of the citizen-based approach. "That has worked very well, because it made it clear to people why TA is important".

Lars Klüver (born Copenhagen, 1955), is director of the Danish Board of Technology Foundation. He has over 25 years experience of practical and theoretical work in technology assessment and foresight with a special focus on the development of interactive methodologies ranging from Consensus Conferences to World Wide Views. He has a masters degree in environmental biology and ecology and a diploma from the Danish public leadership course (KIOL).

Is the importance of TA sufficiently recognized? The European Commission and national organizations for research funding now embrace the concept of responsible research and innovation as if it were something very new.

Klüver: "On closer inspection RRI looks very similar to TA. Or rather I should say, TA is the core of the concept. So it is very important that we connect ourselves as TA-institutes with RRI, that we remain - so to speak- 'in the loop'. If we don't, there is a real risk that TA will disappear from view and that everyone will focus on RRI instead."

Fundamental threat to TA

A more fundamental threat to TA, believes Klüver, is the lobby for evidence-based policy. If only politicians and policy makers would do what we say, believe some scientists, the world would look a whole lot better. "In TA we do not talk about evidence-based policy, but about knowledge-based policy", says Klüver. "That is an essential difference, because with knowledge-based policy you also take into account the knowledge, experience and values of other stakeholders. If you take that out of policy - if the results of scientific research are directly translated into policy - you're doing the wrong thing."

What about subjects for which a scientific consensus exists, such as climate change and vaccination.

Again, it's not just the science, according to Klüver: "Policies for climate change or vaccination involve more than just the results of scientific research, because there are also values at stake. The vaccination debate is much more complicated than the question of whether you should or should not vaccinate your child. Personally, I am convinced of the usefulness of mass vaccination and of the importance of herd immunity, that is, as many people as possible should be vaccinated. On the other hand you have to acknowledge that the risks of vaccination have never been communicated well. Although small, and in my opinion, certainly not decisive, there are risks. Not communicating these risks has now led to an over reaction: there is an outbreak of measles in Germany at the moment. It seems to me an important lesson for the health sector: scientific evidence is only part of the story, it also needs to be socially accepted."

What should be the follow-up to PACITA?

Klüver: "The vision of a PACITA2 project must be a future in which TA is institutionalised in all European countries. But alongside capacity building and institutional strengthening, we should keep on working together as TA-institutes and initiatives. Many projects start with 'fact finding' so if we could do that together, there are economic benefits to be gained without compromising the scope and depth of the research. Quite the contrary would happen, even. To do projects together, you have to have an infrastructure. Not only for the electronic exchange of data, but also for dealing with issues



like intellectual property, for example. Cooperation would allow us to develop new models together, for considering something like the rise of citizen science and its advantages and disadvantages."

"I think that we should engage the European Commission more actively in TA to connect it to the RRI concept and other initiatives of Horizon 2020. There is a need for cross-European TA and I think we have laid a sound basis for it with PACITA. Now we need a PACITA2 to further develop it and turn that sapling into a full-grown tree."

Platforms for the Future

It seems today that societal problems and their possible solutions are seamlessly interwoven with science and technology. These are the spaces of Technology Assessment. But how can the TA-community be strengthened and supported to fulfill this role?

‘Conferences can create an inspiring atmosphere for researchers to present themselves (...) and to engage with a wider community.’

International conferences offer the possibility for scientific communities to come together. For TA we need a specific type of interaction and exchange, where actors from various areas can come together. At the PACITA Berlin conference 2015 this was done with a parliamentary evening for MPs from several countries and TA experts or with a special session on science journalism. Through these efforts we prepare ourselves for embarking on complex challenges.

TA conferences began in October 1982 when the Ministry of the Interior of the Federal Republic of Germany hosted a conference in Bonn that attracted some 60 experts from 11 countries. In 1987, Amsterdam held the ‘1st European Congress on Technology Assessment’ and it was followed by events in Milan in 1990 and Copenhagen in 1992. These conferences contributed significantly to the conceptualization, philosophy, as well as institutionalization of TA and strengthened the European debate on several levels. Not only did these early events provide insights into which topics needed analysis but they also initiated networking and cooperation at an international level. The European Parliamentary network (EPTA) was - and still is - exceptionally important for bringing TA-relevant research topics to the attention of national parliaments.

Over 25 years after these first events, the two PACITA conferences – 2013 in Prague and 2015 in Berlin brought together interested researchers, stakeholders and politicians from all over the world opening new spaces and networks for TA. Their main aim was to offer contemporary formats of mutual learning and professional mobilization and combine TA relevant activities such as risk communication, foresight or policy analysis. Especially, in the light of today’s pressing challenges, it seems essential to provide spaces for ‘discourse’ of TA. Being a problem-oriented approach, TA needs areas of exchange and ‘identity-shaping’ particularly where its institutionalization is still unclear. The format

of conferences can create an inspiring atmosphere for (young) researchers and practitioners to present themselves, their questions and to engage in exchange with a wider community.

Our plea and vision for 2020 would therefore be to provide ongoing international conferences for TA. To make this happen we need an international association of TA, which can serve as a power to institutionalize and form these platforms. This association should be built on European experiences, for which the PACITA project was essential. Precisely because the institutionalization of TA is still in its infancy, it is important to support such processes in project and institutional forms.

Text:
Constanze Scherz
and Julia Hahn
Photos:
Tomas Michalek



Read More?

Cope, D., 2014: Technology Assessment and Parliament – the Indispensable Link. In: Technology Assessment and Policy Areas of Great Transitions. Proceedings from the PACITA 2013 Conference in Prague. Prague, Technology Centre ASCR 2014, 437 pp., ISBN 978-80-7333-106-1

Dröge, P., 2013: Talking TA: PACITA Great Transitions Conference. In: volTA n. 4, April 2013, <http://volta.pacitaproject.eu/talking-ta-pacita-great-transitions-conference/>

Drone art

Artist Addie Wagenknecht investigates the cultural connection between technology and social interaction. In the Black Hawk Paint series, drone aircraft create work that is part performance piece, part political statement and designed to create conflict for the viewer.

Text:
Ann Maher
Photo courtesy of
bitforms gallery, New
York. Photo of the artist:
Alex John Beck



Present state of mind?

Fragile. It's been a period of heavy sudden losses for me. I mean, really sudden, freak loss. So life and everything around it feels very much in a state of flux at the moment. The illusion of stability is a bit gone, or shifted. I've been reminded how quickly it can go and return.

Biggest success?

At this point in my life, its getting to do what I love every day. I still have a list of things I want to accomplish which I haven't reached yet.

How did you get where you are?

A lot of hard work and it continues to be such. I am really lucky and very privileged to have a career that does not feel like work most of the time.

What did you want to become when you were a child?

An artist, war photographer, or surgeon.

Heroes?

My heroes shift often. Sometimes Oprah, the Guerrilla Girls... my mother, sister. Mostly it's my friends who are heroes, and heroes who are friends. It's amazing to walk into a museum or see a TED talk – or run into an interview in a magazine and know the person personally. I feel so lucky to be surrounded by brilliant people so often.

Failures?

I try to believe everything has a reason, even if we don't always get the opportunity to know what that is in the moment. The things I've regretted, often have opened doors which wouldn't have been there if I hadn't 'failed' in the first place.

Plans for the future, dreams?

To challenge, inspire and shift peoples' definitions and notions of what is inflexible.

What will it take to get there?

Art.

Biggest fear?

Probably being in a plane when it crashes.

Inspiration?

So often it's when I am hiking or on a long backcountry ski trip. It has a lot to do with repetitive motion for me; it clears my mind for new ideas. Also, whenever I am travelling - art, colors, sounds, listening to lectures or interviews. It really is everywhere and anywhere for me. I am always making notes of ideas and concepts that I write down whenever they hit me, which is all the time. .

Plans for the future?

I have a few curators and artists I very much want to collaborate with. With Deep Lab - we have an upcoming residency at the New Museum in NYC and an exhibition this fall. In the short term I want to travel to Morocco, Burma and Mongolia and finish a new piece for the asymmetric love series in time for an exhibition this September.

Heaven and Hell. From magic carpets to drones at the Boghossian Foundation – Villa Empain, Brussels, Belgium 6th March-6th September 2015
www.villaempain.com

Read More?

For more projects for artist Addie Wagenknecht
www.placesiveneverbeen.com

The University of MOOC

How did a 15-year-old boy from Ulan Bator in Mongolia end up with top scores at MIT for his Circuits and Electronics class? By signing up for a MOOC - the online learning phenomenon. Can they create a solid foundation for life-long learning in Europe?

‘The burning issue in the MOOCosphere is the search for business models...the sub-issues of scale, sustainability monetisation, accreditation for MOOC learning and openness’

MOOCs - massive open online courses - enable universities to use new technology and the internet to offer courses online, free of charge. Massive, because there are few limitations to the number of students who can enroll. Open, because they are free of charge and anyone interested can enroll, and online, well, because everything happens on the internet. 15-year-old Battushig Myanganbayar from Mongolia was encouraged by his high school principal to sign up for the first Massachusetts Institute of Technology (MIT) MOOC course in order to learn science and technology in a way that was not possible in Mongolian schools. The course he signed up for attracted 150,000 students from all over the world.

In 2012, several private companies with MOOC platforms offering courses at top universities in the United States emerged, including Coursera, Udacity and edX. By the fall of 2012, edX had registered more than 370,000 students, while at Coursera, a staggering 1.7 million students had enrolled. While there have been previous examples of free online learning activities, it was the scale of the platforms, with courses from top-ranked universities, that made MOOCs widely known. 2012 was ‘the year of the MOOC’ according to The New York Times magazine.

MOOCs are usually based on the same structure: video lectures replace a professor giving lectures on campus, and social media technology gives students the opportunity to connect, discuss the course, and get feedback from others. The students also do assignments, for example quizzes, written material, or other work to demonstrate skills.



Text:
Marianne Barland
Photos:
iStockPhoto

While the first big MOOC-initiatives came from the US, numbers from the EU suggest that European universities now account for almost a third of MOOCs worldwide. But can MOOCs really transform the way we deliver and perceive education in Europe?

Life changing technologies

Yes, according to a 2015 report from the Scientific Foresight (STOA) unit that assesses scientific and technological policy options for the European Parliament. They list MOOCs as one of ten technologies that could change our lives and point to the accessibility and low-cost education they provide as very positive factors. The democratization of knowledge is an important process for people all over the world. But STOA also considers some unexpected impacts. Although a MOOC seems to provide high quality education for free, it is not clear whether this actually increases educational uptake in the population. The majority of students enrolled in MOOCs already have a university degree; does easy access lead to more people engaging in higher education? Some MOOC providers report very high dropout rates – as few as 10 percent finishing a course after signing up.

While MOOCs are promoted as free of charge, students do contribute something that might be



considered just as ‘valuable’: lots and lots of data. Tracking every move the students make while logged into their platform, MOOC providers could end up with a valuable revenue stream. But who owns these data: the student, the MOOC platform or the university providing the course? These privacy-issues are important to deal with.

Addressing the policy issues

In the years following ‘the year of the MOOC’, enrollment rates are still high but criticism has emerged related to the courses, learning methods and business models that continue to be addressed in order to attract new students.

Currently, no universities offer complete degrees based solely on completion of online courses. The core concept of MOOCs makes this difficult, for example the assessment of students’ work. In a traditional setting, a professor might be teaching and grading classes of 50-100 students. In 2013, Udacity announced that 314,000 students had signed up for their course CS101 – Introduction to Computer Science. With numbers like these, individual assessment is clearly impossible. Several MOOC platforms have addresses this by letting students assess and grade each other, based on some predefined guidelines. It is possible to ‘audit’ courses. While this provides students with some feedback, peer-assessment is far from satisfactory for proving the knowledge they have gained to future employers, for example. The peer-assessment also makes it extremely difficult to uncover incidences of cheating.

In 2013, The British Department for Business Innovation and Skills (BIS) investigated the effect MOOCs might have on education in Britain and the

rest of Europe with the aim of identifying elements that need to be addressed by policy-makers. At the beginning, many students were happy to participate in courses without getting a diploma in the beginning (after all, it was free of charge), but accreditation is a fundamental issue. Several American MOOCs now provide for-credit courses, according to the BIS report, and Europe is also discussing different ways of demonstrating knowledge gained through MOOCs. Proving that you have taken a course is not generally free: learners pay for a ‘statement of participation’ (FutureLearn) or ‘verified certificate’ (edX, Coursera). Fee-based courses aimed at professional studies are becoming more available. In 2014, Udacity, one of the original ‘big three’ MOOC platforms, announced ‘nanodegrees – a new type of credential for a modern workforce’. As the BIS report noted: “The burning issue in the MOOCosphere is the search for business models...the sub-issues of scale, sustainability monetisation, accreditation for MOOC learning and openness.”

Mozilla, the open source community most known for the web browser Firefox, encourages the representation of skills and competencies with its ‘Open Badge’ initiative. They argue that learning happens in many different places. Through verified badges, one can get recognition for what is learnt – whether it happens in school, at the workplace or online.

Blended learning and flipping the classroom

The MOOC platform edX has experimented with their formats since they started out in 2012. For example, the SPOC – small private online class – that is in clear contrast to the massive, open ones. The SPOC focuses on blended learning methods where

the students watch video lectures and read course material online, and use their time in the classroom to discuss with professors and fellow students or work on projects or assignments. The big difference is that these smaller, closed groups are able to provide a close connection between students and the professor – and thus avoid the challenges associated with the big groups: assessing a huge number of students, cheating, students ‘shopping around’ and trying out courses without completing them.

This blended method of online and face-to-face learning has already existed for some years. Salman Khan is an early pioneer, founder of the non-profit organization Khan Academy. In 2004, Salman Khan started tutoring his younger cousin in mathematics by making short explanatory videos, which he posted on YouTube. His young pupil could watch the video over and over, stop if she needed more time, and rewind to study parts of the explanation in more detail. His group of students grew. In 2009 the concept had grown large enough for him to quit his job as a hedge fund analyst and work full time at the Khan Academy. The concept of lectures at home and problem solving in the classroom has become known as the ‘flipped classroom’. It has become hugely successful. The Khan Academy has thousands of videos covering different subjects and continues to grow.

Life-long learners and new technology

New technology changes the way education is delivered, but it also changes the needs and requirements of the workplace. A nurse in 1990 was trained in a quite different environment than a nurse educated today. Technology and digitalization create a continuous need for further learning, competency building and new skills. The smorgasbord of knowledge made available by the emergence of MOOCs and SPOCs offer huge potential for the

future.

Sebastian Thrun, co-founder of Udacity, questioned existing concepts of education in an article with Britain’s Financial Times in 2014: “As we move into the 21st century we have to rethink whether a once-in-a-lifetime education is the correct solution,” he stated. “The university [model] was invented when your education would get you your first and last job. Now we live in a very dynamic society where people have lots of careers, where technology moves really fast and whatever you learn expires very quickly.” Why should we stick to education being a one-time thing?

These arguments from Thrun open a potential path for MOOCs in the future. Many governments have concrete policies for lifelong learning, often closely connected to work place competencies. In the EU’s lifelong learning program, which ended in 2013, the goal was to foster an advanced knowledge-based society. Supporting development of ICT-based resources was one of the specific objectives to reach this goal. Could flipped classrooms, SPOCs and blended learning be the way to go?

An example of a more lifelong approach recently launched in Norway: a MOOC teaching mathematics provided by the University of Tromsø and Sør-Trøndelag University College. This MOOC is not intended for students in mathematics however, but for math teachers in elementary school. An opportunity for teachers, who have little flexibility in their work days, to expand their competences, learn new teaching methods and discuss with other teachers, without taking time off to attend full-day courses.

Using technology to create a tighter connection between education, work place and universities might help us create a solid foundation for lifelong learning across Europe.

Read More?

Ten Technologies which could change our lives. Potential impacts and policy implications
Scientific Foresight (STOA) Unit (2015)
www.europarl.europa.eu/EPRS/EPRS_IDAN_527417_ten_trends_to_change_your_life.pdf

The Maturing of the MOOC. BIS research paper number 130. September 2013

British Department for Business Innovation and Skills
www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf

Want to try?

edX provides several courses in cooperation with European universities such as Delft University of Technology, Sorbonne Universités and Karolinska Institutet.
www.edx.org

FutureLearn is a MOOC platform owned by The Open University in the UK. They provide courses from 40 partners all over the world including universities and institutions such as the British Museum and the National Film and Television School.
www.futurelearn.com

iversity is a European MOOC platform providing courses in different languages including English, Spanish, German and Russian.
www.iversity.org

Independent science for EU policy?

With the departure of the first (and possibly last) Chief Scientific Advisor (CSA) to the European Commission at the beginning of 2015, what is next for scientific policy making in the EU?

Text:
Emiliano Feresin

Photo:
Wikimedia Commons

Integrate the role into Commission structures

There were many aspects to my role as Chief Scientific Advisor including examining how best evidence can be made available to develop policy and how to establish a cross-Commission foresight activity to prepare the EU to take advantage of our outstanding research output in a safe and sustainable way. Aside from the CSA, the Commission has its



own in-house science service whose job is to deliver science for policy and we also developed strong links with European Academies such as EuroCase (<http://www.euro-case.org/index.php>) and EASAC (<http://www.easac.eu>). I think independence is crucial, as is the proper use of existing resources. Based on my experience, I would favour continuation of the CSA role but it is vital that the post is much more connected to other Commission structures and procedures.

Professor Anne Glover, Richard von Weizsäcker Fellow, Robert Bosch Academy, Berlin – Former CSA to the European Commission

An opportunity to improve the role of science

Europe has a remarkable array of institutions at the interface of science and decision-making. However, the termination of the CSA office is an opportunity to have a broader discussion about improving the role of science in informing EU policy making. For instance, in the Commission's Joint Research Centre, there is considerable potential to develop a more significant role for supporting Commission deliberations. Such a role could be demand-driven, with information requests coming from the policy side, or supply-driven, coming from the expert community, or ideally both. Formalizing the roles and responsibilities of experts in the policy process can help to ensure the integrity, timeliness and relevance of science.

Professor Roger Pielke Jr., Center for Science and Technology Policy Research, University of Colorado, USA
<http://rogerpielkejr.blogspot.nl/>

Make independent institutions stronger

Education and scientific research are crucial, but who owns the scientific agenda and its data? What drives science? The use of biotechnology in agriculture, for example, is highly controversial. The new political and business mantra of 'sound science' and 'evidence-based policy' is scary. Various owners of the scientific agenda try to influence each other on the goals of research and ignore society as a stakeholder. Corporations use 'sound science' to assault the precautionary principle and push for a Transatlantic Trade and investment Partnership (TTIP) between the EU and US. But the scientists' role is not instrumental to economic growth and jobs creation. Instead of a centralised CSA, we should make public institutions like EFSA stronger, ensure that they are funded independently and free from any corporate or political interference or blackmailing.

Bart Staes (Belgium), MEP, Group of the Greens/
European Free Alliance
www.bartstaes.be

New options coming

I am informed by President Juncker that Research, Science and Innovation Commissioner Carlos Moedas has been charged with presenting options before the summer on how to better institutionalise future independent scientific advice to the Commission. What is important is the output from the office, that is to give European policy-makers access to sound, independent scientific advice. These are very much the guiding principles of our work at STOA for well over 25 years.

Mairead McGuinness (Ireland), Vice-President of the European Parliament, Group of the European People's Party (Christian Democrats)
www.maireadmguinness.ie

Read More?

www.slideshare.net/SciAdvice14/1000-days-in-the-life-of-a-science-advisor-38529597