President's Science and Technology Advisory Council
PSTAC

Notes from the discussion of the first meeting 27.02.2013

Four high-level topics have been identified during the first PSTAC meeting. Those are sketched out in this document and will serve as the basis for the next meeting. Additional topics may be added at any time.

Four each topic a final report will be drafted by the end of 2013.

1. Science and society

1.1. Communication

More direct communication is needed with policy decision-makers

An educated decision-making process should be the baseline for policy decision making. Such an evidence based policy decision-making approach needs to be strengthened by deliberation and stakeholder inclusion (analytic-deliberative process). This implies that communicating about science only is not enough, it must entail also many societal and other aspects.
The importance of long term investment in science must be valued by decision makers as well as the inspirational aspect of science.

More direct communication is needed with citizens

Science must be seen as an element of knowledge and thereof of culture.
Explaining benefits and risks is essential.
Defining best practice for communication tools is a prerequisite.
Communication need to be a two way process.

For both the general public and the decision-makers, providing consensus based evidence is fundamental. Clarification needs to be provided as to what is absurd, possible, likely, or certain. Being open about real uncertainties must be part of these discussions.

1.2. Trust

Trust goes both ways

Scientists must be better trusted by society. This can be achieved by using mental models and narratives that are easy to grasp for non-scientific audiences. One of the goals of science communication is to explain the limits of science and its inherent uncertainties. The notion that there is only occasionally one truth in science and the fact that the 'on-going' process is a rule must be explained.

The scientists must trust their audiences as well. They should be concerned by addressing questions they haven't addressed yet, but which are demanded by society. Foresight can be an essential element in this, opening up a cultural dialogue between science and society.

Trust is about being honest about uncertainty

The notion of 'real' uncertainty in science needs to be explained. Demonstrating how science does reduce uncertainty and therefore reduce unfounded fears is key.
Messages about threats are too often distorted by media, lobbies, and interest groups. Uncertainty that is artificially created (often by vested interest) should be shortcut ("when an idea clashes with an interest, the idea loses"). *E.g. when there are about 14000 articles in support of the anthropogenic nature of climate change and 24 against it, the debate in the media is still purported as being 50-50.*
The sociological aspect of ownership (what is in for me?) should be addressed better.
Trust consists of four components which need to be addressed: knowledge, utility (benefits), self-efficacy (personal agency) and identity (emotional belonging).

2. Science as an opportunity

2.1. Risk and reward must go together

Science has its own value. Curiosity and quest for knowledge are goals in themselves.
Science is about providing knowledge for the benefits of society. This includes the assessment of opportunities and risks associated with policy decision options, including the diffusion of innovations.
The absence of reward considerations in risk assessments is often hampering innovation. Mastering risk must be promoted; it is an opportunity to decrease the gap between discovery and applications. Perception of risk-taking has an individual, societal and cultural background that must be taken into account.
A major element of science is to understand complex causal relationships, characterize the uncertainties associated with different options and to provide rational means to deal with ambiguity and ambivalence.

2.2. Looking at both sides of the coin of scientific progress

Scientists must also address the consequences of discoveries that lead to ambiguities in the experience of technical and social change. For example those can be issues raised by synthetic biology (e.g. genetically modified viruses as a potential threat), the limits of anthropotechnics, or potential adverse consequences of nanotechnology materials.
Applied science needs to draw potential solutions to enhance not only the efficiency of production and services but also the resilience against unwanted side effects and random disturbances. One example might be tackling antibiotic resistance.
It is essential that scientists be part of the debate they create by their discoveries.

3. Science as human capital

3.1. Promoting critical thinking by all

The principles of evidence and scientific methodology need to be explained to a wide public, from citizens to decision-makers. It is of value to anyone at work, in public or private organizations and in daily life. Teaching competencies and motivating both genders must be part of this objective, starting in pre-school age.
Public understanding of sciences and humanities (PUSH) is not a one-way street. Beyond the need to make people more literate about science, technology and the humanities, the science communities need to be sensitive to public concerns and social conflicts.

3.2. Fostering more innovation

Innovation must be seen as part of a wider value chain (education; raising interest and enthusiasm for science and technology, promoting science & technology; enabling cooperation between knowledge producers and knowledge users, production; market, product acceptance).
In addition to knowledge, acquiring skills is essential to trigger innovation.

4. Embedding science in a vision for Europe and beyond

4.1. Providing science a vision as a narrative for Europe

Scientists can participate together with politicians, stakeholders and representatives of civil society in defining a long-term vision for society that is inspirational as well as evidence-based.
Such a vision should be anchored in the commonly agreed value triangle of peace, freedom, and sustainable well-being, including environmental quality, economic prosperity and knowledge based employment and social justice.

4.2. European leadership in scientific thinking

Europe has to be a leader and light-house proclaiming that science is a fundamental pillar for society and has an inherent cultural value.
Philosophy and science were once a historical nucleus for cosmopolitan thinking that originated in Europe. This scientific heritage of the Renaissance and Enlightenment entails more than the objective of scientific activities as providing purely economic benefit.
Science is an integral part of modern culture and it can serve multiple proposes, for example in the area of diplomacy (e.g. possible new relations with Africa). It is an 'international currency' that is dwelling on human capital. Scientific literacy must be seen as a value in itself.
The empowerment is up to us.