**Stakeholder Statement: Research Nano Lab, Deutsches Museum & TUM Munich 🡪 Markus Lackinger**

Often politics, society, and economy perceive basic science solely as a motor for invention. This aspect is certainly important, but should not be the only motivation for funding this type of research. A likewise important, but often overlooked purpose of basic science is training and education of young people at all stages of their career. Last but not least, the urge for knowledge has always been a pivotal driving force, even for supporting economically hopeless endeavors. Yet, focusing on a direct and prompt economic applicability together with the interplay of science and media has often provoked great but unkeepable promises for the future at very early stages of discoveries.

As an example for important discoveries in material related nano-science I will discuss the different known carbon-nano-materials: buckminster fullerenes, carbon nanotubes, and graphene. Especially, the research on graphene in various directions has become one of the hottest topics in nano-science, even though graphene-based consumer products are not yet available 10 years after its groundbreaking discovery.

For me it is important to also advertise the other aspects of basic science and not only advocate the direct national economic impact. On the other hand, when discoveries have the potential to drive innovations and create wealth, collaborations between scientists and engineers have to become more efficient, not only for the benefit of both sides, but also in the interest of a return on investment for the society.

**Stakeholder Statement: Nanotechnology Industries Association 🡪Steffi Friedrichs**

**The term ‘nanotechnologies’** was first used by research laboratories and innovative industries just over 20 years ago. Despite this rather short timespan (compared to traditional innovation cycles), nanotechnologies are already widely known and recognised for their high innovation potential by both the public and decision makers; coupled with their characteristic wide-spread application in the improvement of processes and products across all known industry sectors, this has seen them likened to other general-purpose technologies (GPTs), such as the steam engine and the computer.

As with any novel technology, the potential impacts of nanotechnologies on the environment, and on human health and safety need to be considered throughout the responsible value chain (i.e. from the R&D stage, through commercialisation, and along the life-cycle of nanomaterial-enabled products), and industries adopting nanotechnologies into their products and processes have for over 10 years proactively collaborated with regulators, in order to secure the innovation power of nanotechnologies and their societal benefits responsibly and sustainably.

The benefits of nanotechnologies are wide-ranging and have often found their way to application in the form of solutions to large, universally accepted challenges, such as climate change (to which nanotechnologies provide innovations such as greener production processes, and economically viable renewable energy sources), skin cancer prevention (in support of which nanotechnologies have been shown to provide the best long-lasting wide-spectrum cosmetic UV-filters), early detection of pathogens and other health risks (which nanotechnologies achieve in both cheap printed sensors on standard food packages, as well as in the form of complex fast screening processes for medical use).

The list of benefits provided by nanotechnologies both to the consumer, and to the environment and to the economy are too important for any country to miss out on; the responsibility for the future success of nanotechnologies must be shared by all stakeholders, in order not to stifle elements of our society’s sustainability

**Stakeholder Statement: The Danish Ecological Council 🡪 Lone Mikkelsen**

The development of nanotechnology and nanomaterials is a great example of how small is beautiful and that extremely small is absolutely fantastic!

Huge investments are being made in Europe in the development of nanotechnology and nanomaterials. It is however a historical fact that there are no free lunches and it seems inevitable that there will be some health and environmental risks associated with the use of nanomaterials although we do not know the exact nature of these risks yet. In a report from 2013, the European Commission outlined that in 2009, sales of nano products had a total value of 200 billion euros, but already in 2015, the Commission expects that revenue will be increased to 2 trillion. This corresponds to an increase of 900 % in just six years. The sharply growing of the production volumes of manufactured or engineered nanomaterials goes together with raising concerns from both scientists and wider public on potential damage to health and environment. At the same time, current EU chemicals legislation is not sufficient to protect against these concerns. Moreover, there is a misinterpretation of the science where “No evidence of harm” is mistaken for “evidence of no harm”. However, the issues crippling hazard identification are not easily overcome and current regulation is not sufficient to control potential risks.

Most recently, the European Commission's Scientific Committee on Emerging and Newly-Identified Health Risks has stated that the increasingly widespread use of nanosilver as a biocide in consumer and health-care products may cause additional, long-term effects on human health and the environment.

History confirms that while technological innovations can bring many benefits, they can also cause much human suffering, environmental degradation and economic costs. We underline the importance of restricting dispersive uses of nanomaterials and that all nanomaterials commercialized are tested properly in regard to human and environmental risks.

**STAKEHOLDER STATEMENT: Danish Consumer Council -> Claus Jorgensen**

“The general population is of the opinion that Denmark shall be frontrunner, not only in developing and using nanotechnology, **but also when it comes to being in front with a sound and critical approach including meaningful research into risks and ethics**”

* Action plan on nanoscience and nanotechnology from the Danish Ministry of Technology in December 2004

The Danish Consumer Council couldn’t agree more.

The steering committee behind the action plan also stresses the fact that research into the risks has to be a part of every nanoproject. Research into both benefits and risks is necessary for a sound development of nanotechnology.

The problem today, ten years later, is that we still know very little about the risks of nanotechnology and already we see more than 1,200 nano-products on the Danish market. Most consumers do not know what nanotechnology is and they are not aware of the fact that we already have nano-products on the market.

The lack of knowledge among consumers and the fact that nano-products are on the market already **combined** with the fact that nobody knows the risks to health and environment of using nanotechnology calls for regulation and an information effort beyond the ordinary.

The consumers need to be informed about the benefits AND risks.

What needs to be done:

* **Use the precautionary principle**
* **Strengthen public research**
* **Establish a national information centre for nanotechnology**
* **Establish inventory (national/EU/global) and make it public**
* **Secure transparency from industry**
* **Involve stakeholders and citizens**
* **Label products containing nanomaterials**

If we all can agree that nanotechnology is an important and valuable technology, which we can benefit from now and in the future, it’s important that the regulation is in place, so that the consumers can trust that the authorities have the potential risks under control and that the benefits and risks are transparent for the consumers and thus makes them capable of making an informed choice.