Source: Nanopodium

Responsible nanotechnology R&I – Societal engagement practices

Dutch Societal Dialogue on Nanotechnology

Introduction

NANO2ALL is an initiative funded by the European Union's Horizon 2020 Research and Innovation programme under the Grant Agreement Number 685931. It supports the establishment of Responsible Research and Innovation (RRI) policy and governance on nanotechnologies. NANO2ALL also aims to identify RRI practices, with a focus on societal engagement in nanotechnology research and innovation (R&I) across Europe and beyond, with the purpose to share knowledge, experience and recommendations with other nanotechnology stakeholders and motivate a wider application of such mechanisms in Europe.

RRI is an approach that anticipates and assesses potential implications and societal expectations with regard to R&I, with the aim to foster the design of inclusive and sustainable R&I[1]. As a dimension of RRI, societal engagement implies interactions between relevant stakeholders (companies, research organisations, policymakers, civil society organisations, consumers, affected citizens and others) in order to align research, development and innovation with the values, expectations and needs of the society. Such interactions can take various shapes, such as brainstorming, scenario workshops, user committees, online forums, dialogues, informal / formal meetings, or other formats.

This short report provides brief insights into the Dutch Societal Dialogue on Nanotechnology that took place from March 2009 until January 2011. Data for this report were gathered via desk research (reviewing the proceedings from the PACITA 2013 Conference, the final report of the Committee Societal Dialogue and the publication of Lotte Krabbenborg: Involving civil society actors in nanotechnology: creating productive spaces for interaction), as well as the written consultation of Dr. Pieter van Broekhuizen, and Dr. Adrienne Sips.

[1] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

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Societal Dialogue context

The "**Societal dialogue on nanotechnology**" in the Netherlands was mandated by the Dutch government from March 2009 until January 2011, as part of a broader set of societal experiments aimed to support the **responsible governance of nanotechnology in its early stage of development**[2]. The societal dialogue was included in the Dutch Action Plan for Nanotechnology (2008), to **address uncertain and ambiguous risks of nanotechnology** and to reflect on its **broader societal and ethical issues**. The process was organised by an independent committee, the Committee Societal Dialogue Nanotechnology (CieMDN).

CieMDN's main assigned task was to implement "a broad discussion in which viewpoints and opinions could be expressed by all kinds of stakeholders and publics. **The societal dialogue was a bottom-up process and was implemented in the form of small projects** in which CieMDN invested EUR 4 million. The small projects were carried out by civil society organisations, as well as mainly professional organisations working in the interface of technology and society and education[3] who proposed their own interaction activities. The priority themes / nano application areas to be focused during the Societal Dialogue in the various projects were defined by CieMDN in close collaboration with experts and stakeholders from science, industry and civil society organizations.

CieMDN funded altogether 35 projects[4], distributed between four categories (TV programme for a general audience, Publications for a general audience, Activities targeting secondary school children, and Science cafes and discussions all over the country).

Design & operation

The dialogue's activities enabled several activities where stakeholders and citizens could learn about technology and share their doubts, concerns and views related to societal and ethical aspects directly connected to nanotechnology. The entire dialogue process consisted of the **implementation of two stages: (i) information & awareness raising and (ii) dialogue** within the aforementioned timeframe**.** Therefore, CieMDN subsidised three types of activities / projects: informing the general public or specific groups including youth, awareness raising and bottom-up dialogue activities.

The dialogue process was designed without any agenda pro/contra nanotechnology. The main intention was to stimulate and facilitate a societal dialogue and enable a varied range of questions, issues and perspectives. This dialogue approach was chosen intentionally, since previously it was observed that Dutch citizens had a low level of awareness of nanotechnology and nano-enabled products, and nearly half of the population indicated that they did not know anything about this technology.

As referred above, the **priority themes / nano application areas** that served as a basis for discussing risk/benefits of nanotechnology and related ethical and societal issues were **defined by CieMDN** members in close collaboration with experts and stakeholders from science, industry and civil society organizations. They focused

[2] Wiebe Bijker: Technology Assessment: The State of Play, in Proceedings of the PACITA 2013 conference in Prague, pp 23-36

[3] Lotte Krabbenborg: Involving civil society actors in nanotechnology: creating productive spaces for interaction, Ipskamp Drukkers BV, Enschede, Netherlands, 2013

[4] Further details and the list of granted projects can be consulted in Annex I.

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on themes that were not sufficiently addressed, at the time, in the public debate in the Netherlands: health and food, nature and sustainable society, security and privacy, international aspects and sustainable economic growth. While nanotechnology risks/benefits related issues can cover mainly toxicology, economic benefits, labelling and precaution, societal and ethical questions refer to broader aspects that new technologies might trigger, like shifts between natural-artificial, public-private, altered societal values, norms, relations, as well as the way technology is governed[5].

The Dialogue started with a Working Conference and a Zero Measurement of public awareness and opinions on nanotechnology. The website Kennislink – a popular science website - opened a theme page on nanotechnology. CieMDN published a Public Agenda and organised a starting event. The participants (citizens, experts and stakeholders) of the dialogue were invited by an open call in daily newspapers and by direct invitation.

Nanopodium[6] was set up to select the 35 projects and coordinate the dialogue. The project selection was done in two stages; the first-stage projects started in December 2009 and the chosen projects were mainly to **inform the public,** the second-stage projects in the spring of 2010 and this round was more **focused on dialogue**.

1ST STAGE: INFORMATION AND AWARENESS RAISING PHASES

The **information and awareness** phases focused on the information provision through media and activities, for instance TV programmes and dialogue activities including websites, social media, school courses, science cafés, theatre play, etc. These engaging methods led to opinion forming and discussion aiming to cope with the lack of knowledge about nanotechnologies amongst many participants and raise awareness about nanotechnology and ethical and societal issues, paving the way for the dialogue phase (2nd stage).

Source: http://www.daandirk.com/portfolio/nanotube/

2nd STAGE: DIALOGUE PHASE

The dialogue phase consisted of projects that aimed at stimulating face-to-face and online interactions between technology developers and civil society actors, as well as between citizens. These interactions were science cafés, discussions, theatre performances followed by discussions, among others. Interactions usually used information / awareness raising materials created in the previous stage in order to stimulate discussion (vignettes, film, among others). It is to add that some dialogue activities were more framed towards a one-way communication setting, while others triggered actual interaction between participants (two-way communication).

Source: http://nanopinion.archiv.zsi.at/sites/default/files/webversie_verantwoord_verder_260111_def_compleet1.pdf

[5] Lotte Krabbenborg: Involving civil society actors in nanotechnology: creating productive spaces for interaction, Ipskamp Drukkers BV, Enschede, Netherlands, 2013

[6] Nanopodium is an initiative of CieMDN. Nanopodium is a platform for exchanging ideas, opinions and suggestions to discuss the opportunities and threats of nanotechnology for individuals and society.

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To summarise the Dutch societal dialogue process approach, Table 1 provides a short overview of its design choices including the brief analysis of the intended benefits, potential costs (negative aspects) as well as the actual results of these choices. It is of note that the below design choices relate to the entire societal dialogue process. The design choices of the individual small projects were made by the project proposers within the frames set by CieMDN.

Table 1 Design choices for the Societal Dialogue on Nanotechnology in the Netherlands, 2009-2011

Design element	Design choice	Intended benefit	Potential cost	Result
Organiser	Independent ad hoc committee, supported by sub-contracted secretarial team (provided by Technopolis, Amsterdam)	Avoid suspicion that the dialogue was "rigged" by the government	No political mandate and thus no a priori commitment by the government to the results	Worked well: participants trusted the process; the vice-minister of social affairs publicly received the dialogue's outcome with positive speech
Budget	EUR 4 million, to be spent mainly through two open calls for proposals for subprojects (with budgets between EUR 15 and 130 thousand)	Substantive budget helps to generate high quality input; Out-sourcing will help engage broad range of experts	Waste of money; Out-sourcing may result in lack of quality control	Worked well: project generally considered valuable; Most subprojects of good quality with only few exceptions
Agenda	No agenda in terms of pro/contra nanotechnology; a working conference with experts and stakeholders helped CieMDN decide the content themes and dialogue activities (goal was: to stimulate and facilitate a societal dialogue on nanotechnologies, including their social and ethical aspects, resulting in a societal agenda for nanotechnology)	Open agenda allows for broad range of questions, issues and perspectives	Lack of focus	Worked well: most relevant questions were discussed; participants felt welcome and taken seriously to raise issues. One aspect was insufficiently addressed: international and development questions (including the potential effects on reaching the UN's MDGs)
Content themes	Five priority themes were defined: •Health and food •Nature and sustainable society •Security and privacy •International aspects •Sustainable economic growth Focus on concrete applications and products was recommended	Limited set of themes to provide focus of the dialogues and to increase opportunity for synergies between subprojects	Wrong choice of themes that does not resonate sufficiently with interests and agendas of participants	Worked rather well: good for structuring the dialogue; but rather an uneven interest distribution in practice, resulting in relatively little attention to international economic aspects
Process phasing	Dialogue process 2009-2011 had two overlapping stages: 1st Stage Information & Awareness 2nd Stage: Dialogue	Cope with the lack of knowledge about nanotechnologies amongst many participants	Lack of attention to politically directly relevant issues	Worked very well: good for structuring the dialogue process and for selecting subprojects; subprojects did not feel the phasing as a straightjacket but used it relatively loosely

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Design element	Design choice	Intended benefit	Potential cost	Result
Participants	Invited by open call in Dutch daily newspapers and by direct invitation: •Experts •Stakeholders •Citizens	For the discussion of "ambiguous" and "uncertain" risks participation is needed by experts + stakeholders + citizens	Dialogue of the deaf	Worked well; many activities had heterogeneous participation but some were fruitfully focused on sub-sets of participants (e.g. school children, members of the protestant churches, chemical industry, etc.)
Media & means & activities	Broadest possible spectrum of media, means and dialogue activities (including websites, social media, school courses, TV programmes, science cafés, theatre play, etc.)	To reach a broad range of participants and to allow for very different styles of thinking, engagements and discussions	Lack of focus	Worked well; different media clearly catered different groups of participants
Source: Wiebe Bijker (Technology Assessment: The State of Play, in Proceedings of the PACITA 2013 conference in Prague, pp 23-36), http://www.pacitaproject.eu/documentation/				

SOCIETAL DIALOGUE CONCLUSION

Based on the outcomes of the funded activities/projects and also from the opinion polls made at the beginning and end of the entire dialogue process, CieMDN delivered an official report recommending moving forward responsibly with nanotechnology. After studying this advice, the government responded formally to it in a letter to the parliament dated 23 September 2011, mainly leaving it up to existing initiatives and organisations including the NanoNext consortium to continue dialogue on the issues raised in the report of CieMDN. The government also declared their intention to address sustainable development, risks and regulation and societal issues of converging technologies (nano, bio, info, cogno), in close collaboration with the social partners, experts and other governments and the EU. The current interest in RRI builds upon experiences in the Dutch and other national and international dialogues on responsible governance of nanotechnology. With hindsight, the Dutch dialogue is most relevant to the RRI keys public engagement, science education and governance.

Dutch Societal Dialogue Findings

Based on an interview conducted by Dr. Ineke Malsch with Professor Peter Nijkamp (President of the Committee Societal Dialogue Nanotechnology) in 2011, it can be concluded that there is a need to familiarise the members of society with the different aspects and ethical issues in order to be more susceptible to nanotechnology, since it was observed that the general public is not aware of this technology, nor of the risks involved and the economic consequences of its implementation. Considering this**, it is necessary to have a balanced, organised discussion, involving all stakeholders, with formal and informal dialogues, where the contents of the dialogue is determined by society**. This way, society will be positively impacted, since the responsibility for the decision making is held by the people and not by the government and stakeholders. This allows for carefully thinking through /considering unbiased public's position, relying on the information provided by independent mediators and not influenced by third parties. **The Committee responsible for the debate's organisation should be independent,** without the intervention of neither government nor stakeholders and without having a hidden agenda.

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According to the final report of CieMDN, in order to reach a high level of public awareness and engagement, the **information provision on nanotechnology should be delivered first and continually updated** throughout the process. Further to that, the information delivery should be tailored considering the targeted group and the intended scope. **The general public engagement can be done through artistic objects and products**, since they promote the reflection about nanotechnology by making it imaginable. The committee also realized that projects that envisage more than the delivery of information were more successful than the projects that only had the purpose of providing information. It is therefore suggested that, **the provision of information should be combined with activities that focus on opinion forming and exchange**.

With respect to the audience size, **dialogues carried out in small scale** - small meetings, such as focus groups or workshops **had better results and impact** compared to the ones taking place in the Internet forums or panels. The "program" is more profitable in small groups, so that people can be directly involved in the subject.

The **five priority themes defined for the project worked well for structuring the dialogue but received an uneven interest distribution** in practice. For instance, the Committee concluded that more dialogue was needed on the potential contributions of nanotechnology for economic development, especially in developing countries, because Dutch citizens are by themselves already interested in issues closer to home like health, food and privacy.

In addition, based on a short consultation with Dr. Pieter van Broekhuizen[7], it can be concluded that **the long-term effect of the Dutch dialogue on responsible nanotechnology governance is especially the agreement amongst social partners** (employers, organisation and the trade unions), endorsed by the government on the establishment of provisional nano reference values, **and also the establishment of a Guidance for safe working with nanomaterials and nanoproducts** (ranking of hazardous nanomaterials and advising SMEs about how to manage the risks). In his opinion a question that should be answered is:" Why should the general public be more aware of this nanotechnology than the common practice with the development of other technologies?" Dr. Pieter van Broekhuizen points in the direction of the anticipated health hazards of nanoparticles, and the forecasted economic benefits of the use of nanomaterials, which are not necessarily all in the area of (nano)technology. A negatively formulated answer could be: to make the general public co-responsible with the introduction of new materials for which so far insufficient health hazard data are available and a reliable risk governance frame is lacking. I.e. facilitate the industry to carry on with these developments which do not comply with current legislation. As such the nano dialogue could also be classified as a large window dressing operation, but paradoxically very interesting for the heterogenic group of scientists involved in this innovative technology and the governmental policy makers (and some other stakeholders).
With regard to the future, he also stressed that on-going nano RRI and governance projects are the repetition of the same questions and issues discussed in the nanotechnologies' debate. He argues that **new projects should try to avoid this repetition and set a real step forward**. In addition, the **responsibility and roles of researchers and "future designers" should be more explicitly the subject of discussion, and possibly as well the subject of a governance framework**. Nano topic (risks and RRI) is too complex to keep the attention of the public, but **the issue is not really nano, but rather new technologies**. Therefore, the point is to bring forward and discuss questions on **how we like to shape our society, using technologies as solutions for global problems, but keeping the human dimensions as key in our societies.**

[7] During the Dutch dialogue, Dr. Pieter van Broekhuizen was working at the research & consultancy organisation IVAM at the University of Amsterdam. He was the coordinator of the European project NanoCap (2006-2009),, and was involved in the organization of the Social Economical Councils' positioning towards safe working with nanomaterials, and the development of the nano reference values (NRVs) (2008-2012). During the NanoDialogue he participated in different projects, by advising them or participating in meetings, interviews etc. At the same time an Advisory Board on Nano was launched by the Ministry of Environment, in which employers' organisations, industries and CSOs regularly met (about ones or twice a year), and discussed (technical and regulatory) nano-developments. Also, the KIR-nano expert panel was launched, to discuss the fundamentals and impact of the NRVs. He took part in both commissions.

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