



Created in 2003, VivAgora is a non-governmental organization working to promote participatory democracy regarding scientific and technical choices. In a world where risks and uncertainties created by technologies are increasing, we advocate and act for citizen engagement in the governance of technology, in order to make more sustainable, humane, and fair choices. By building capacity, increasing the influence of civil society, and facilitating the expression and participation of all stakeholders in public and ongoing debates, we seek to create a new culture of innovation which benefits the community at large.

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VIVAGORA'S PERSPECTIVES ON NANOTECHNOLOGY DEVELOPMENT AND REGULATION

Informing, bringing together, and involving all stakeholders Organising the pluralistic governance of nanotechnologies

Convinced that nanotechnology will bring tremendous changes not only in many industries (transportation, energy, medicine, cosmetics, food-processing for example), but also in our social relations and life-style, **VivAgora wants to facilitate the appropriation and debate by all citizens of the issues raised by nanotechnology.** Because we are all affected by nanotechnology in one way or another, often without even knowing it, **nanotechnology must become “a matter of public interest”, openly debated.** In order to ensure that nanotechnology innovation is made in a responsible way, we think it is necessary to:

- > **Increase awareness about and help citizens understand the numerous issues raised by nanotechnology and its governance (or lack thereof)**
- > **Conduct an open, inclusive, and ongoing debate about the opportunities, risks, and uncertainties of nanotechnologies, by gathering and involving all stakeholders**
- > **Bring societal considerations into innovation processes, so that nanotechnology research and development (R&D) ultimately responds to citizens' needs.**

Increase awareness about and help citizens understand the numerous issues raised by nanotechnology and its governance (or lack thereof)

Nanotechnologies concern each and every one of us. Nanoparticles are already present in our paints, cars, food and cosmetics, and more futuristic applications aim at enhancing human performances. Their health, environmental, ethical, and societal implications will increase in the future, as the investments they receive are constantly increasing.

However, because this is a technical area and because industries don't openly disclose their activities in this domain, nanotechnology remains largely ignored by the public. Civil society lacks the resources (whether informational or financial) to investigate the stakes and issues related to nanotechnologies and be recognized as a full partner in the technological choice processes. Hence, discussions about their usefulness and purposes have, so far, been also very limited. VivAgora wants to reduce the gap between the experts and laymen's points of view, by helping to respond to citizens' need for information about nanotechnology's



Fist (FIRST)debate in the “Nanomonde” (=“Nanoworld”) cycle, organised by VivAgora at the “Cité internationale universitaire” in Paris, on 12th January 2006.

VivAgora’s engagement in nanotechnology issues

VivAgora has been committed to fostering public debate on nanotechnologies (SINCE)as early as 2005.

> In 2006

VivAgora organised two series of public debates on nanotechnology:

- 6 debates in Paris, entitled the “NanoMonde”
- 6 debates in Grenoble, “NanoViv”, upon request from local authorities.

> In 2007

VivAgora took an active part in the Steering Committee of the Citizens Conference on Nanotechnologies which was held in “Ile-de-France” (Paris and surroundings).

VivAgora contributed to the “Cahiers d’acteurs” presented during the three round-table conferences held in March 2007 at the “Cité des Sciences et de l’industrie” (Paris).

VivAgora endorsed the Principles for the Oversight of Nanotechnologies and Nanomaterials along with a broad coalition of civil society, public interest, environmental and labor organizations concerned about various aspects of nanotechnology’s human health, environmental, social, ethical, and other impacts.

actual or potential uses, benefits, risks, responsibilities, controls and regulations.

- > **What is the information available about nanomaterials and nanoparticles** (labels on products, for example) and their risks for human health and the environment?
- > **What are the rationales leading to the creation of nanotech centers which receive public funding** (Minatec, Clinatec, NanoInnov, for example)?
- > **What are the power and responsibilities of the market and of public administrations** in terms of scientific policies and technological choices?
- > **How are citizens, consumers, users, workers, and patients protected?**
- > **How should the uses of nanotechnologies potentially harmful** to health, the environment, or the “common good” be controlled and regulated?
- > **Which norms, regulations, safeguards, and monitoring are currently established? And by whom?**
- > **What are the liabilities of the different actors** (public administrations, industries, labs, etc.)?
- > **What is the level of attention paid to the questions of justice and fairness** (North vs. South) in the access to the benefits of nanotechnologies?

Conduct an open, inclusive, and ongoing debate about the opportunities, risks, and uncertainties of nanotechnologies, by gathering and involving all stakeholders

In the current context of economic, social, and ecological crisis, we advocate for a “technical democracy” which would tune nanotechnology innovation to citizens’

expectations, needs, and values as well as today’s ecological requirements.

Nanotechnology R&D offers opportunities, but is also a source of risks and uncertainties; its societal, environmental, ethical implications must be questioned and debated.

Examples of questions:

Should we allow nanotechnology to be used for human enhancement or just for medical treatments?

Nano-biotechnologies can interfere with the human body itself: nano-devices can detect, monitor, or deliver chemicals in our bodies. As such, they can be used to cure or repair that which is injured, diseased, or impaired... but also to develop wholly new capabilities that are expected to go way beyond what is currently thought to be “normal” human performance. For example, “human enhancement” technologies could boost brain power, develop artificial senses like ordinary sight, anti-ageing medication, etc.

It is now not only our bodies but also our behaviours and moods which can be monitored, repaired, normalized, or “enhanced”. The risk and advantages of these projects as well as the values they serve have to be publicly debated. Is the “enhancement of human performances” a goal that we want to pursue? The question is relevant since this is what the USA, in a tradition that values individualism and competition, has explicitly defined as a goal for nanotechnology development.

Should we allow the development of living machines and synthetic living organisms?

Futuristic visions from the nanotech promoters (like self-assembling and self-replicating machines or synthetic living organisms), whether realistic or not, lead research activities in a precise direction, to the detriment of other types of research. They bring into play metaphysical concepts, blurring the border between living/synthetic organisms, nature and artifice, as well as the relations between human activities and the environment. This has to be collectively discussed and decided.

These are only a few examples of the questions that should be collectively debated and answered for nanotechnology R&D to be done according to the views expressed by civil society.

For each kind of application, we should consider the following questions: What needs does it meet? Is it the only or best possible answer? What are the underlying values behind its development (competitiveness and individualism for example)? Which social and cultural changes would result from it? Are they acceptable and if yes, under which conditions?

To explore these questions and connect them with the decision-making process, we have to develop new models of governance. Indeed, although several public debates have been held on nanotechnologies, none has actually had any real impact on nanotechnology R&D.

VivAgora advocates for the development of open, ongoing, and participative governance models, which should be articulated with the actual research and

development in labs and factories: close attention must be paid to the local contexts in which nanotechnology activities are done.

Another key success factor is the inclusion of all stakeholders. In this perspective, conflicts are to be regarded less as obstacles than as resources for the collective construction of the decisions.

Introduce societal considerations into innovation processes, so that nanotechnology R&D ultimately responds to citizens' needs

Public debates on nanotechnologies, no matter how well organized, will however not be sufficient to establish technical democracy.

VivAgora wants to involve companies, especially in food-processing and cosmetics fields, who often don't participate in public debates – mainly because they are concerned with protecting industrial secrets and/or their liability, should some accidents or problems occur regarding either public health or the environment.

Indeed, in order to introduce societal considerations in the very heart of the innovation processes, we think it is necessary to work with rather than without industries and companies.

The goal is a sustainable and responsible development of nanotechnologies, via the development of new tools, ranging from social contracts on risk-benefit ratios, to controls and regulations, guidelines about liabilities defined with insurances companies, and meaningful labels.

VivAgora supports the efforts of companies who care about the health of their workers, the environment, and the social usefulness of their products. It offers to companies tailor-made processes of interaction with the unions, allowing for the construction of robust and collective innovative projects.



> In 2009

VivAgora set up a Citizens' Alliance on the issues of nanotechnologies (ACEN-CACEN), a platform of NGO concerned about nanotechnology. This collective will open, at the end of 2009, a collaborative Internet portal to provide civil society with relevant information on nanotechnology.

VivAgora organized a series of conferences on the theme: "Life Engineering 2.0 : Synthetic biology under scrutiny"

Since June 2007, VivAgora has been involved in co-organising the permanent NanoForum led by William Dab (CNAM) and supported by the French "Direction générale de la santé" (DGS).

VivAgora is also active within:

- the "Nano" group of AFNOR (= French Standard Institute) (in liaison with ISO "nano and society" and "nano and sustainability" groups)
- the Sectorial Committee on nanotechnologies of the "Agence nationale de la recherche (ANR)" (French National Research Agency);
- the "Nano" group of the "Conseil National de la consommation" (CNC) (French Consumers National Council).