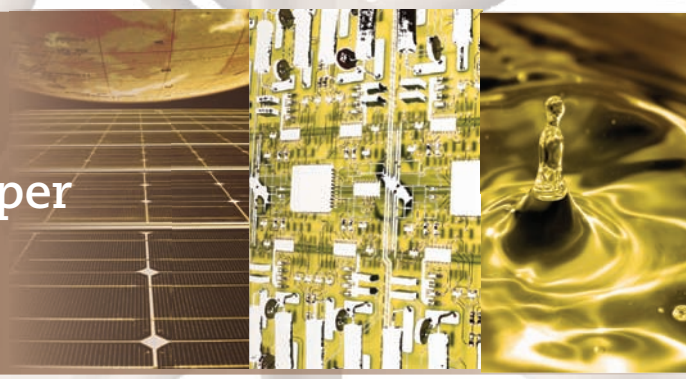
OECD Conference on Potential Environmental Benefits of Nanotechnology: Fostering Safe Innovation-Led Growth

15-17 July 2009,
OECD Conference Centre, Paris - France

Conference Background Paper



ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

CONFERENCE BACKGROUND PAPER

BACKGROUND

The world is currently facing the most severe financial and economic crisis in decades. The OECD's latest Economic Outlook shows that the world economy is now in recession. Projections point to a protracted downturn in the economies of the OECD countries, with GDP likely to decline by at least a third of one percent in 2009.

In order to respond to these unprecedented events, many countries have launched economic stimulus packages with the aim of putting their economy back on a sustained growth trajectory. Most of them focus on pumping more "green" into their economies, on the premise that the use of solar panels and wind turbines, fuel-efficient cars and buildings, and low-carbon technologies will lead to more jobs, additional savings and a cleaner, safer planet.

Building on its expertise on structural issues and whole-of-government approaches to policy making, and on its longstanding work on open markets, the environment and innovation, the OECD is monitoring these developments and identifying policy options for addressing the crisis and seizing the opportunity to build a stronger world economy. One of key recommendations of the OECD is that any economic recovery measure should be based on low-carbon paths to growth, on innovation and on knowledge creation. In particular, innovation is considered as a key instrument for boosting productivity and sustainable growth. This will be further articulated in the OECD Innovation Strategy, currently under development, which will include recommendations to sustain and strengthen innovation under the current socio-economic conditions.

In one view of innovation, nanotechnology is described as a "platform technology". It is seen as having the potential to significantly contribute to raising living standards and improving quality of life. Nanotechnology is already being applied in many consumer products, particularly in the healthcare sector. Further applications are anticipated in areas ranging from energy to security, from environmental protection to information and communication technologies. Ways of maximising the benefits of nanotechnology are moving onto the agenda as a new source of growth and a possible "win-win" opportunity for both the environment and the economy. In this respect, the topic of this conference fits well with OECD's current efforts for fostering "green", "safe" and "innovation-led" growth.

OBJECTIVE AND SCOPE OF THE CONFERENCE

Informed by the recent OECD "Strategic Response to the Financial and Economic Crisis"[1], the OECD Working Party on Manufactured Nanomaterials (WPMN) and the OECD Working Party on Nanotechnology (WPN) are organising this conference to examine the contribution that nanoscale innovation may make in encouraging the development of technologies that can result in environmental gain without unintended consequences. These gains are both relative, such as reducing future environmental impacts of one technology when

[1] http://www.oecd.org/dataoecd/33/57/42061463.pdf

compared to other competing technologies, and direct, such as where a technology reduces the past environmental impacts of human activity.

The conference will cover both the opportunities and the challenges for the use of nanotechnologies as one societal approach in accessing potential benefits for the environment. The aim is to learn from international expertise and to identify ways in which to promptly improve policies, which could potentially enhance short-term, as well as long-term growth.

The conference will provide an opportunity for government, academia and industry to look into the state-of-art of nanotechnologies, their potential environmental benefits and potential human health and environmental safety concerns at the same time and to examine related policy considerations.

SPECIFIC OBJECTIVES

The objectives of the conference are to:

- Identify a range of environmental challenges, which could benefit from nanotechnology;
- Review key technologies with a nanotechnology component which are state of the art and which have the potential to bring environmental benefits;
- Identify the extent of the possible environmental benefits from the application of those nanotechnologies;
- Consider the environmental health and safety implications related to the use of nanotechnology for environmentally beneficial purposes;
- Identify challenges for the development, commercialisation and application of nanotechnology for environmental benefit; and
- Discuss policy measures to address challenges in the application of nanotechnology for environmental benefit and their relevance in the context of future OECD work programmes.

TOPICS OF THE CONFERENCE

The conference will address sustainability and life cycle aspects in a variety of sectors in which nanotechnology has the potential to give rise to environmental benefits. Thus, the conference will explore the environmental profiles of emerging nanoscale innovation with the goal of encouraging development of technologies that can result in environmental gain while avoiding unintended consequences.

The topics to be addressed will fall into four key areas:

- Societal drivers such as policy innovations, and business/NGO leadership.
- Applications to reduce pollution (e.g.: energy storage and generation and energy conservation, catalysis);
- Cleaner production (e.g.: green chemistry; synthesis and processing of nanoscale materials, water treatment and purification); and
- Other environmental benefits (e.g.: environmental remediation and monitoring, filtration, enhanced environmental sustainability of agriculture).

STRUCTURE OF THE CONFERENCE

The conference will consist of:

- Keynote presentation(s) by authoritative speaker(s) on the topics;
- Plenary sessions that introduce the conference and various perspectives on nanotechnologies;
- Parallel sessions that focus on specific technological case studies through workshops; and
- Plenary session wrap up and review of findings and policy-related conclusions.

The initial plenary sessions will introduce the discussion points for each following parallel session and focus on participants' attention on the conference topics and expected outputs. The first session will introduce the key policy themes of the conference through presentations of various stakeholder perspectives and start to raise the main policy issues that are to be addressed in the parallel sessions which follow. The second session will define and discuss what a life cycle perspective is and how it relates to nanomaterials design, development, incorporation and use in products and ultimate disposal.

The parallel sessions will focus on case studies related to specific applications and environmental benefits, including:

- Applications to reduce pollution (e.g.: energy storage and generation and energy conservation, catalysis);
- Cleaner production (e.g.: green chemistry; synthesis and processing of nanoscale materials, water treatment and purification); and
- Other environmental benefits (e.g.: environmental remediation and monitoring, filtration, enhanced environmental sustainability of agriculture).

Each session will be structured to address all of the following aspects:

- State-of-art technology (the state of the art of one or more nanotechnologies applicable to the sector);
- Potential environmental benefits (of using the technology);
- Potential human health and environmental safety concerns and issues (i.e. challenges for implementation); and
- Policy considerations (i.e. policy measures to address any challenges in the application of nanotechnology for environmental benefit).

This background paper is accompanied by a *Guidance for Speakers, Moderators, and Session Organisers*. The outcomes of the discussion will be reported back to the conference for further discussion and the drawing of conclusions in the final plenary session.

OUTPUTS OF THE CONFERENCE

At the end of the conference, participants will review the findings and policy-related considerations collected by the rapporteurs during the plenary sessions and workshops. This review will feed directly into the outputs from the conference which will be a summary report including:

- Each of the background papers from the plenary sessions and the workshops.
- A short review of the benefits and risks from state-of-the-art technologies which have been discussed at the conference and, in particular, the potential role of nanotechnology in realising environmental benefits;
- A summary of the challenges and opportunities in the application of nanotechnology for environmental benefit in the areas discussed; and
- A number of policy areas for further examination by the OECD to be undertaken through its Committees and Working Parties as appropriate.

The summary report of the Conference will be widely distributed to OECD stakeholders and other policymakers and will be made available through OECD website: www.oecd.org/nanobenefits.

PARTICIPANTS

Participants are from:

- International and intergovernmental organisations active in nanotechnology and environmental policy and regulation;
- National OECD delegates (from member and non-member countries) with government and agencies responsibility for nanotechnology, manufactured nanomaterials and related sectors;
- Business organisations and companies in sectors where nanotechnology has the potential to bring environmental benefits; and
- Other stakeholders including NGO's and academia.

OECD Conference on Potential Environmental Benefits of Nanotechnology: Fostering Safe Innovation-Led Growth

15-17 July 2009, OECD Conference Centre, Paris, France

Wednesday 15 July 2009		Thursday 16 July 2009				Friday 17 July 2009			
8:30	**Registration**								
9:30	**Opening Session**	9:00	**Parallel Sessions**			9:00	**Parallel Sessions**		
9:45	**Plenary Session 1: Setting the Scene**		**1. Water treatment and purification**	**2.Environmental sensing**			**6. Better Batteries Enabled by Nanoscale Innovation**	**7.Agricultural nanotechnology**	**8. Greener nanoproducts**
13:00	Lunch Break	13:00	Lunch Break			13:00	Lunch Break		
14:30	**Plenary Session 2 Life cycle perspectives**	14:30 - 18:00	**Parallel Sessions**			14:30 - 18:00	**Final Plenary Session**		
			3. Clean car technology	**4.Cellulose nano fibres**	**5. Site remediation**		Reports from parallel sessions Conclusions Closing Remarks		
18:00	Reception								

www.oecd.org/nanobenefits