International Symposium on Assessing the Economic Impact of Nanotechnology

Session One: Setting the Scene

The OECD, WPN and the assessment of the economic impact of nanotechnology.

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CONSEIL GENERAL DE L'ECONOMIE
DE L'INDUSTRIE, DE L'ENERGIE ET DES TECHNOLOGIES

Washington DC,
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RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ÉCONOMIE
DES FINANCES ET DE L'INDUSTRIE

the Inter-Governmental Organisation for Economic Cooperation and Development : **OECD**

The origin of the OECD dates back to 1960, when 18 European countries plus the United States and Canada joined forces to create an organisation dedicated to global development.

Today, the 34 OECD member countries span the globe, and include advanced and emerging countries.

OECD also has advisory committees from Business and Industry (BIAC) and Trade Unions (TUAC)

OECD – Global Partners

The OECD also works closely with emerging giants like China, India and Brazil and developing economies in Africa, Asia, Latin America and the Caribbean

The OECD's focus has broadened and it now maintains **co-operative relations with more than 70 non-member economies.**

The OECD had **regional initiatives** covering Europe, the Caucasus and Central Asia; Asia; Latin America; the Middle East and North Africa (MENA). The Sahel and West Africa Club creates, promotes and facilitates links between OECD countries and West Africa.

The OECD also **works with International Organizations** including -

International Labour Organization, Food and Agriculture Organization, International Monetary Fund, World Bank, International Atomic Energy Agency, and many other United Nations bodies, the International Transport Forum.

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TURKEY
UNITED KINGDOM
UNITED STATES

Accession process

Russia

Enhanced Engagement Countries

Brazil
China
India
Indonesia
South Africa

The OECD Committee Scientific and Technological Policy (CSTP)

CSTP is responsible for encouraging co-operation among Members and with non-members in the **fields of science, technology and innovation policy,** with a view to contributing to the achievement **of economic, social and scientific aims, including growth and the creation of skilled jobs, sustainable development, improved well-being of their citizens and advancing the frontiers of knowledge.**

CSTP pays particular attention to the integration of science, technology and innovation policy with other aspects of government policy, which is of increasing importance in the development of increasingly globalised knowledge economies.

Working Parties under CSTP

- OECD Global Forum on the Knowledge Economy
- OECD Global Science Forum (GSF)
- Steering Group on Governance of International Co-operation on Science, Technology and Innovation for Global Challenges (STIG)
- Working Party of National Experts on Science and Technology Indicators (NESTI)
- Working Party on Biotechnology (WPB)
- Working Party on Innovation and Technology Policy (TIP)
- Working Party on Nanotechnology (WPN)
- Working Party on Research Institutions and Human Resources (RIHR)

The OECD Working Party on Nanotechnology WPN

- Established in 2007 as subsidiary group of the Committee for Scientific and Technological Policy
- Role
  - To **advise on emerging policy issues** of science, technology and innovation related to the **responsible development of nanotechnology.**
  - To **promote international co-operation** to facilitate research, development, and responsible commercialisation of nanotechnology.

The WPN works co-operatively with other OECD groups such as

- The Working Party on Manufactured Nanomaterials **WPMN**
  (*parent : Chemicals Committee*)
- The Working Party on Biotechnology **WPB**
  (*parent : CSTP*)
- The Working Party of National Experts on Science and Technology Indicators **NESTI**
  (*parent : CSTP*)

WPN STRATEGIC PRIORITIES 2011-14

1. **Monitoring and analysis of policies for nanotechnology**, including scientific and technological policies

2. **Considering policies for gaining economic returns** from investments in nanotechnology.

3. **Facilitating the enabling environment** for nanotechnology.

WPN STRATEGIC PRIORITIES 2011-14

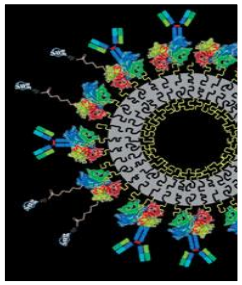
4. Monitoring the societal impact of nanotechnology

5. Considering the policy implications of technology convergence.

6. Engaging with other organisations and groups focused on nanotechnology development.

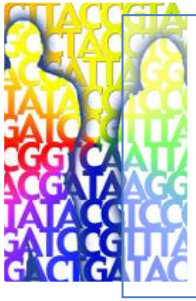
Major WPN projects for the 2011-2012 period

Assessing the **Economic Impact** of Nanotechnology

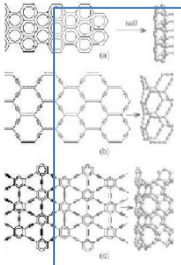


Regulatory Frameworks for Nanotechnology in Food and Medical Products

Social Dimensions of Nanotechnology



Integration of Nanotechnology in **Converging Technologies**



Using **Nanotechnology for Green Growth** and sustainable development

Major WPN Symposium for the 2011-2012 period

Assessing the **Economic Impact** of Nanotechnology

WPN Project on Assessing the Economic Impact of Nanotechnology

WPN has been **interested** in this issue **since** it was established in **2007;**

- Began **consideration of a Symposium** or Workshop on the topic in **2008;**
- Found it challenging to **engage with Economists** on broad impacts *too early* – judged this would be more fruitful **when there were a range of applications already on the market.**

WPN Project on Assessing the Economic Impact of Nanotechnology

- WPN interests reflect **micro-economic issues**, such as creating the right business environment, in addition to the **macro level interest** of supporting the contribution of nanotechnology to economic growth, and the **meso-economic impact** linked to strong transformational capacity of nano and converging technologies at the nanoscale.
- For WPN, this also means **facilitating engagement between the various communities** of interest from
  - Nano Science and Technology; Economy ; Statistics and Regulatory policy; Knowledge and Transfers
  - Engineering; Responsible Innovation
  - International groups – for example ISO (non governmental, industry-led)

International Symposium on Assessing the Economic Impact of Nanotechnology

WPN recognises that, in order to encourage and maximize Countries engagement in supporting Nanotechnology Responsible Development, Governments need to have robust Tools and Mechanisms

- to **evaluate the qualitative and quantitative returns and benefits** of their investments, and

- to **assess more broadly the economic impacts** of nanotechnology developments.

International Symposium on Assessing the Economic Impact of Nanotechnology

This Symposium aims to systematically explore the **need for and development of a <u>Methodology</u> to assess the economic impact of nanotechnology across whole economies, factoring in many sectors and types of impact**, *including new and replacement products and materials, markets for raw materials, intermediate and final goods and employment and other economic impacts.*

International Symposium on Assessing the Economic Impact of Nanotechnology

For OECD Member Countries, support for nanotechnology is about investing in future, long lasting, economic growth, employment and the health and well-being of citizens.

In more recent years, this interest has expanded to include the role of nanotechnology-induced changes in ensuring Green Growth and sustainable economic development.

Assessing the economic impact of nanotechnology is about ***identifying and measuring these impacts, and supporting governments to move forward in developing systematic, joint or comparable, multi-criteria Methodologies.***

International Symposium on Assessing the Economic Impact of Nanotechnology

However governments face a number of challenges in attempting to assess the economic impacts, which we will be exploring as this symposium moves forward.

Challenging issues, many reflected in the agenda for the symposium, include:

- ***Lack of agreed terminology and definitions for nanotech***
- ***Limited availability of data regarding nanotech activity – for R&D, number and type of companies involved in the field, manufacture etc***
- ***Lack of a methodology(ies) to link the activity of nanotechnology to value of replacement products through to the scope and measurement economic impacts***

WPN *Nanotechnology contribution to Green Growth Strategy*

Reflecting this broad view of economic impact, WPN is also working on a project to identify and illustrate the Impacts of Nanotechnology on Green Growth and Sustainable Development.

A **Template** will be developed and tested in 2012-13, jointly with the WPMN. We hope to later extend use of the template to other industrial Sectors.

Impacts of Nanotechnology on Green Growth and Sustainable Development

OECD *Green Growth Strategy*, *launched in May 2011 marks the start of OECD's longer term agenda to help countries foster economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.*

As part of the OECD work on Green Growth, the OECD Report *Innovation for Green Growth* **identified that Nanotechnologies offer a wide range of environmental benefits, under the proviso that potential safety issues are addressed.**

Highlighting the impact of Nanotechnology in Green Growth.

Project components

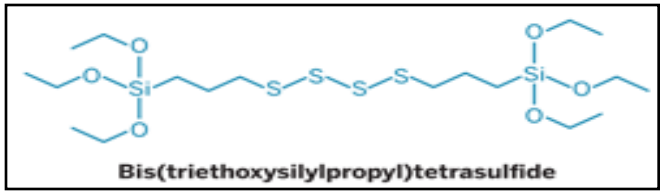
- an analytical report on the range of roles for nanotechnology in green growth
- case studies of country policies, including specific uses of nanotechnology
- a major industry case study looking at the use of nanomaterials in a mass consumer product with a growing market - Tyres

The WPN project on *Nanotechnology for Green Growth* - highlighting the impact of nanotechnology in green growth.

OECD Studies on Environmental Innovation : Invention and Transfer of Environmental Technologies (2011)

Technologies to improve fuel efficiency characteristics of a vehicle (improved vehicle design):

The report recognised that there are a number of factors, not related to engine design, that have an important effect on vehicle fuel consumption, including *Rolling resistance and tire quality.*



The WPN project on *Nanotechnology for Green Growth*

Project components

Tyres case study

- Joint project between WPMN and WPN, supported by the Tyre Industry Project of the World Business Council for Sustainable Development
- The case study will consider many issues arising from the use of nanotechnology and nanomaterials in the tyre industry *including*
  - Status of the technology
  - Societal impacts;
  - Positive & negative environmental impacts through LCA;
  - Environmental Health and Safety risks & best practices; and
  - Knowledge & best practice transfer

WPN engaging international communities (1)

PAST EVENTS

- OECD Workshop on Challenges in the Innovation Environment of Nanomedicine, Seoul, Korea February 2010
- OECD Workshop on Nanotechnology for Sustainable Energy Options, Seoul, Korea, February 2010
- Risk Governance in Nanotechnology Policy Roundtable, Vienna, Austria, September 2009
- OECD Conference on Potential Environmental Benefits of Nanotechnology Fostering Safe Innovation-Led Growth, (with WPMN): Paris, 1 July 2009
- Policy Roundtable on International Scientific Co-operation in Nanotechnology, Braga, Portugal, June 2009
- Nanotechnology and Public Engagement, Delft, the Netherlands, October 2008
- Nanotechnology and the Global Challenge of Access to Clean Water, Copenhagen, September 2008

WPN engaging international communities (2)

On Going and Expected Actions

• ***Ontologies, Terminology and Knowledge Databases*** for Scientists, Teachers, Innovators, Industry, Consumers, Civil Society, Public Authorities : ICSU-CODATA Workshop supported by OECD WPN, Paris, February 2012

• ***Bio-Nano Converging Technologies for Health and Medical/Pharmaceutical Applications*** : Workshop to be convened in Q3-4 2012

• *Participation* of CSTP/ WPN/ WPB to the "*Converging Technologies" Symposium US/NNI / EU/European Commission* in Leuven, Belgium, Sept. 2012

• ***Societal Implications of Nanotechnology***, workshop being considered for late 2012

WPN – Publications

www.oecd.org/sti/nano

- In Press – Nanotechnology Working paper – Policy considerations in moving towards a **statistical framework for nanotechnology** : *Findings from a pilot survey of business activity in Nanotechnology*
- Planning **Guide for Public Engagement and Outreach in Nanotechnology** (2012) (*Brochure available in the foyer*)
- **Fostering Nanotechnology to Address Global Challenges: Water** (2011)
- **The Impacts of Nanotechnology on Companies:** Policy Insights from Case Studies (2010)
- **Nanotechnology: An Overview Based on Indicators and Statistics** (STI Working Paper 2009/7)
- **Inventory of National Science, Technology and Innovation Policies for Nanotechnology** (2008)

OECD WPN

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THANK YOU FOR YOUR ATTENTION

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