

Biotechnology Update

Internal Co-ordination Group for Biotechnology (ICGB)

No. 25 – 6 June 2013

This newsletter provides up-to-date information on activities related to biotechnology at the Organisation for Economic Co-operation and Development (OECD). It is mainly intended for delegates to OECD meetings who are already familiar with certain aspects of OECD's work. We hope that it is also informative for the wider biotech community.

The contents of this newsletter have been provided by those members of the OECD secretariat who are responsible for the various activities. The secretariat can be contacted via the e-mail address: icgb@oecd.org. Alternatively, individuals can be contacted via e-mail using the form firstname.lastname@oecd.org (See Who's Who list at the end of the newsletter).

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Staff movement in STI-IFP:

Mr Pierre-Alain SCHIEB left the OECD at the end of April 2013, after many years of service as an official of the Organisation. He was a long-standing member of the International Futures Programme (IFP) and worked on a variety of topics including the OECD publication "The Bioeconomy to 2030". He has moved to Reims, France, where he has taken up a newly-established Chair on the Industrial Bioeconomy at the Reims Management School. Consequently, Pierre-Alain Schieb remains close to his professional interests and the topics he worked on at OECD. The next edition of Biotechnology Update will contain some additional information on his work at Reims.



ABOUT OECD'S INTERNAL CO-ORDINATION GROUP FOR BIOTECHNOLOGY (ICGB)

The Organisation for Economic Co-operation and Development (OECD) and its member countries have been addressing issues related to biotechnology since 1982.

From that time, biotechnology has had an increasing impact on the programmes of different sectors at OECD such as: agriculture and trade; environment; science, technology and industry. So in 1993, the Internal Co-ordination Group for Biotechnology (ICGB) was established to facilitate co-ordination among these sectors.

Stefan Michalowski, Counsellor of the OECD Global Science Forum, chairs the ICGB. Peter Kearns, Head of OECD's Biosafety Programme, is the Executive Secretary of the ICGB. He is assisted by Bertrand Dagallier, Biosafety and Novel Foods and Feeds Safety, who is the editor of the ICGB Newsletter.

Contacts: Peter Kearns, Bertrand Dagallier (ENV/EHS)

TOWARDS GREEN GROWTH WITH BIOTECHNOLOGY

The Green Growth Strategy, delivered at the 2011 OECD Ministerial Council Meeting, aims 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.

Ongoing work since the launch is focusing on tailoring the Strategy's framework to country, sector and issue-specific areas and on finding better ways of measuring progress towards green growth. OECD work is also underway to support application of green growth indicators in countries and to examine how green growth can help to meet development objectives.

The Green Growth and Sustainable Development Forum (GG-SD Forum)

This is a new initiative aiming at strengthening the coherence of approaches to green growth and sustainable development across the OECD. It enables delegates, experts, businesses and civil society to meet and exchange experiences, to identify key knowledge gaps, as well as policy tools and best practices that respond to specific national circumstances.

The inaugural event took place at the OECD in November 2012 with a central topic of "Encouraging the efficient and sustainable use of natural resources". The GG-SD Forum will continue to operate as a series of annual conferences or workshops, focusing each year on a different issue of relevance to several OECD Committees. This year's Forum will discuss policy options to make the best use of limited public funds to leverage private investment for green infrastructure and technologies. The Forum will take place at OECD Headquarters on 5-6 December 2013. Webpage : www.oecd.org/greengrowth/ggsdforum.htm



Country-specific green growth strategies

Building on the general framework developed in the Green Growth Strategy, the OECD continues to mainstream [green growth in its national and multilateral policy surveillance](#) exercises to provide policy advice that is targeted to the needs of individual countries. These include the Economic Surveys (e.g. [Italy](#)), Environmental Performance Reviews (e.g. [Mexico](#)), Innovation Reviews, and Investment Policy Reviews (E.g. [Tunisia](#)), as well as the *Going for Growth* annual report ([2013 edition](#)) and the Green Cities Programme. These studies cover advanced, emerging and other economies, and have already examined selected green growth issues, providing some first insights into countries' recent actions to green their economies.

Countries are also making good use of the OECD's tools and indicators to measure their progress towards green growth. For example, Denmark and Germany have joined the Czech Republic, Korea and the Netherlands in applying the OECD [green growth measurement framework and indicators](#) to their specific national contexts to assess their state of green growth. The work is underway in New Zealand, the Slovak Republic and Slovenia. With the support of OECD, the Latin America Development Bank, the Latin American and the Caribbean Economic System and the United Nations Industrial Development Organization, work is underway in Mexico, Colombia, Costa Rica, Ecuador, Guatemala, Paraguay and Peru to apply the OECD indicators as a way to identify key areas of national concern and the scope for improving the design, choice and performance of policy instruments. The work is underway also in several countries of the EECCA region. The green growth indicators were perceived by countries as useful to alert to pressing issues that require immediate consideration, further analysis and/or policy action. The OECD [Green Growth Indicators Database](#) is being populated and currently covers selected indicators for OECD

countries as well as key emerging market economies (Brazil, Russian Federation, India, Indonesia, China and South Africa), Argentina and Saudi Arabia for a time period from 1990 to the most recent year available.

Even within a single country, each sector faces unique challenges on the pathway to green growth. The energy sector is one of the key sectors that needs to be engaged in this context. Last year, the OECD and IEA released a joint report [Green Growth Studies: Energy](#) to highlighting the challenges and possible solutions for energy producers and users. Another study includes "[Linking Renewable Energy to Rural Development](#)" that assess the economic impacts of government policies in support of renewable energy on rural regions. Lastly, the OECD recently published a book on [Green Growth in Cities](#), which draws on findings from in-depth urban level green growth studies (Paris, Chicago, Stockholm and Kitakyushu) and two national level studies on urban green growth (China and Korea).

Green Growth in Developing Countries

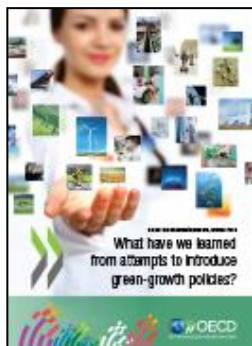


The OECD has just released the report "Putting Green Growth at the Heart of Development". This report demonstrates how OECD has been working with developing countries and development co-operation providers to understand differences in natural resource endowments, levels of socio-economic development, sources of economic growth, and institutional capacity. Beyond the implementation of green growth policies in most advanced economies, green growth can offer concrete opportunities for more inclusive growth in developing countries while protecting the environment.

A [summary for policymakers](#) is also available.

Webpage: <http://www.oecd.org/dac/environment-development/greengrowthanddevelopment.htm>

Towards green growth in emerging and developing Asia



The OECD has engaged in a 2-year horizontal project, whose overarching objective is to help promote green growth in selected ASEAN countries, in line with the region's development objectives. Building on the OECD expertise on green growth, this work will follow up on the OECD Green Growth framework and the OECD Development Strategy, which will be tailored to the specificities of ASEAN economies. This project will include the following:

- A synthesis paper, "[What have we learned from attempts to introduce green growth policies?](#)" seeking to draw lessons from experience in OECD countries.
- A report, "Towards green growth in emerging and developing Asia" (forthcoming 2014)
- A database of green-growth indicators for emerging and developing Asian countries.

Website: <http://www.oecd.org/greengrowth/asia.htm>

OECD regional work on green growth promotion in Eastern Europe, Caucasus and Central Asia

The OECD, in cooperation with three other international organisations, namely UNECE, UNEP, and UNIDO, has started the implementation of a comprehensive regional programme called "Greening Economies in the European Union's Eastern neighbourhood" (EaP GREEN), with a focus on the Eastern Partnership (EaP) countries. The aim is to support these countries' efforts on the path towards greener economies and help governments establish policies that would result in the decoupling of economic growth from environmental degradation and resource depletion, improve the environmental quality of life, as well as open up new sources of growth and contribute to the achievement of fiscal objectives. The EaP GREEN initiative is closely related to the OECD work to integrate environmental and economic policies in countries of Eastern Europe, Caucasus and Central Asia (EECCA), carried out under the umbrella of the OECD's

Task Force for the Implementation of the Environmental Action Programme (the EAP Task Force). One of the main objectives is to improve the analytical base for decision-making on green growth strategies.

Websites: <http://www.oecd.org/environment/outreach/>
<http://www.oecd.org/environment/outreach/policyinstrumentsforgreenereconomies.htm>

The Green Growth Knowledge Platform (GGKP)

The [GGKP's second annual conference](#) was held at the OECD headquarters in Paris on 4-5 April 2013. The discussion was framed around two headline themes: 1) Greening global value chains and 2) Measurement and reporting for green growth. It focused on private sector implementation aspects of green growth in areas of mutual interest to advanced, emerging and developing countries. The conference brought together a dynamic mix of private sector representatives, policymakers and academics from around the world, and included participation of OECD Secretary-General Angel Gurría, European Commissioner for the Environment Janez Potočnik, and UNEP Executive Director Achim Steiner. During this meeting, the GGKP also released a joint report on [Moving Towards a Common Approach on Green Growth Indicators](#).



To promote knowledge- and experience-sharing, the OECD, the Global Green Growth Institute, UNEP, and the World Bank established the GGKP in 2011. The purpose of the GGKP is to help identify and address major knowledge gaps in green growth theory and practice, and to help countries design and implement policies to move towards green growth.

Website: <http://www.oecd.org/greengrowth/greengrowthknowledgeplatform.htm>

Green growth and agriculture

Green growth was identified as one of the priorities by Agriculture Ministers at the OECD meeting in 2010, which has outlined a strategy for green growth in the food and agriculture sector as part of the OECD's Green Growth Strategy. OECD analysis shows that green growth is not only desirable and achievable in this sector. It is also essential, if the food and nutrition requirements of future generations are to be met. This implies that productivity growth must be increased in a sustainable manner, well functioning markets must provide clear price signals that reflect the scarcity value of natural resources, and property rights must be defined so as to encourage optimal use of resources, both individually and collectively.

Since 2010, a number of actions have followed. A recent OECD/BIAC [Workshop on Green Growth in the Agro-food Chain: What Role for the Private Sector?](#) (24 April 2013, OECD) discussed 1) the role of private sector and joint private-public approaches in greening the agro-food sector, 2) potential of new technologies, including biotechnologies, for increasing productivity and reducing waste, and 3) the main obstacles to harnessing private-public partnerships and joint approaches. The OECD is updating and improving a set of agri-environmental indicators in cooperation with Eurostat and FAO. A range of supportive policy work is underway, for example, by looking into market approaches to encourage green growth in agriculture, analysing the impacts of various management practices on resource productivity and efficiency, and measuring progress towards green growth in agriculture.

📖 OECD (2011), [Food and Agriculture](#), OECD Green Growth Studies, OECD Publishing.

Green Innovation

The OECD has recently produced a working paper on “[Biotechnology for the Environment in the Future](#)”, as part of the Science, Technology and Industry Policy Papers.

Environmental biotechnology is focused on biotechnologies for environmental clean-up, and much of the policy in this area is around compliance. Industrial biotechnology has quite different policy objectives and has only started to grow as a field with the worldwide interest in biofuels. Much of the world now has targets for bioenergy and favourable policy regimes to stimulate production and use of biofuels, but sustainability is now a real issue for biofuels production.

Engaging biotechnolgy towards GG - Access to GG material for TFIB

We believe biotechnologies can be part of a global green growth strategy. In order to engage dialogue with the key players in this industry, delegates to the Task Force on Industrial Biotechnology (TFIB) and the Working Party on Biotechnology (WPB) have access to the [International Green Growth Dialogue](#) secure site, a collaborative forum for sharing perspectives and initiatives, and discussing the development of the Green Growth Strategy. In case of access problems, email greengrowth@oecd.org

Key publications:

English

- [Inclusive green growth: For the future we want](#)
- [Towards Green Growth](#)
- [Towards Green Growth - Monitoring Progress: OECD Indicators](#)
- [Towards green growth: A summary for policy makers](#)

French

- [Une croissance verte inclusive: Pour l'avenir que nous voulons](#)
- [Vers une croissance verte](#)
- [Vers une croissance verte : Suivre les progrès : Les indicateurs de l'OCDE](#)
- [Outils pour la mise en place d'une croissance verte](#)
- [Vers une croissance verte : Résumé à l'intention des décideurs](#)

Recent publications: OECD Green Growth Papers and Studies

The new Green Growth Studies series aims to provide in-depth reviews of the green growth issues faced by different sectors. These are available to purchase at www.oecdbookshop.org or free of charge for subscribing institutions via www.oecd-ilibrary.org. Recent studies:

- [Putting Green Growth at the Heart of Development](#)
- [Green Growth in Cities](#)

Green Growth Papers also complement the OECD Green Growth Studies series, and aim to stimulate discussion and analysis on specific topics and obtain feedback from interested audiences. The papers are generally available only in their original language, English, with a summary in the other if available. The OECD Green Growth papers are free of charge via www.oecd-ilibrary.org. Recent papers:

- [Private Sector Initiatives on Measuring and Reporting on Green Growth](#)
- [Greening Global Value Chains: Innovation and the International Diffusion of Technologies and Knowledge](#)
- [Greening Global Value Chains: Implementation Challenges](#)
- [Building Green Global Value Chains](#)
- [What have we learned from attempts to introduce green-growth policies?](#)
- [Why New Business Models Matter for Green Growth](#)

Web site: www.oecd.org/greengrowth / www.oecd.org/croissanceverte

Secure web site: <https://community.oecd.org/community/greengrowth>

Contact: Nathalie Girouard, Ziga Zarnic, Alastair Wood (ENV)



GLOBAL FORUM ON BIOTECHNOLOGY

The Global Forum on Biotechnology, established in 2010, is one of 16 Global Forums created by OECD Committees. Global Forums are not official OECD bodies (except one¹), but are best described as broad communities or networks of stakeholders in the areas of responsibility of one or more Committees. OECD Committees have an interest in hearing the views of these stakeholders, but their capacity to accommodate Partners as Participants or Associates is very limited.

The OECD Global Forums provide platforms for peer learning and policy dialogue on issues which require interaction with non-Members world-wide. Global Forums can also promote multidisciplinary and horizontal approaches beyond the scope of any single Committee and foster partnerships with other intergovernmental organisations.

OECD Global Forums bring together government officials, policy analysts, business leaders, academic experts, researchers and various other stakeholders. Many Global Forum meetings are major events, attracting large numbers of participants from different regional and cultural backgrounds. They help to create active networks of policy makers in Member and non-Member economies, to build consensus on what are the most effective policies and to identify “next-generation” issues.

The principal functions of Global Forums are to:

- Help the Committees identify relevant issues, including newly emerging ones;
- Promote a convergence of views on the Committees’ outputs among a broad range of Members and Partners;
- Ensure that these outputs are known and used among these stakeholders;
- Share best practices in the implementation of the results.

The Global Forum on Biotechnology supports the activities and networks in the field of biotechnology developed by the Committee for Scientific and Technological Policy and the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology.

Web site: General information on the Global Forums can be found at:
www.oecd.org/globalrelations/forums
(French: www.oecd.org/relationmondiales/forums).

Contact: Jan Schuijjer (SGE/Global Relations Secretariat)

¹ The Global Forum on Transparency and Exchange of Information for Tax Purposes differs from all other Global Forums: it is a separate OECD Body in which many countries and economies outside the OECD’s Membership participate on an equal footing with OECD Member countries.



ADAPTATION TO CLIMATE CHANGE

As part of the programme of work on Economic Aspects of Adaptation to Climate Change, case studies examine what role the private sector can play in facilitating adaptation to the impacts of climate change.

One of these case studies – *Adaptation and Innovation: An Analysis of Crop Biotechnology Patent Data* – examines inventive activity to develop crop varieties that are more resilient to certain abiotic stresses through a patent analysis. This analysis provides an indication of trends in innovation in adaptation-related biotechnology and examines where innovation takes place and how knowledge is transferred across national borders. The report was overseen by the Working Party on Climate, Investment and Development (WPCID) and was published as an Environment Working Paper in March 2012. It is available in both English and French (see <http://dx.doi.org/10.1787/5kg221jkf1g7-en>).

Contact: Michael Mullan (ENV/CBW)



HARMONISATION OF REGULATORY OVERSIGHT IN BIOTECHNOLOGY

The OECD's *Working Group on Harmonisation of Regulatory Oversight in Biotechnology* (WG-HROB) deals with the environmental risk/safety assessment of transgenic plants and other genetically engineered organisms. The work aims to ensure that the types of elements used in biosafety assessment, as well as the methods to collect such information, are as similar as possible amongst countries. This improves mutual understanding and harmonised practice, which in turn, increases the efficiency of the biosafety assessment process, limits duplication of effort, while reducing barriers to trade.

The participants to the Working Group are mainly officials responsible for the environmental risk/safety assessment of products derived from modern biotechnology. Observer delegations and invited experts are associated with the work, incl. Argentina; the Russian Federation; FAO; UNEP; the Secretariat of the Convention on Biological Diversity (SCBD); and the Business and Industry Advisory Committee to OECD (BIAC). Key partner economies such as Brazil, China, India, Indonesia, Philippines or South Africa collaborate actively to the work, given their increasing use of biotech products and the development of breeding activities on tropical and sub-tropical species. Their participation is supported by the OECD's Global Forum on Biotechnology.

The publication of Consensus/Guidance Documents continues to be a major output of the programme. They constitute a set of practical tools for regulators and biosafety assessors dealing with new transgenic plant varieties and organisms, with respect to environmental safety. To date, 46 Consensus Documents have been published. They address a range of issues including the biology of crops, trees and micro-organisms as well as selected traits that have been introduced in plants. They are available through the OECD website (www.oecd.org/biotrack).

New documents on the following crop/tree species: tomato, sugarcane, sorghum, cassava, cowpea and eucalyptus are under development. Issues related to micro-organisms are also being addressed, e.g. the recent publication on bacteria pathogenicity factors, another one being prepared on the genus *Fusarium*, the *Conference on Environmental Uses of Micro-organisms* held in March 2012, and further new projects under consideration. Work is in progress on two key issues in the context of environmental risk assessment: 1) Considerations for the release of transgenic plants, and 2) Situations of low level presence of genetically-engineered plant materials in conventional seeds or commodities. In addition, the first document dealing with an animal species is being prepared on the biology of Atlantic salmon.

Moreover, the WG-HROB recently agreed to contemplate developing Consensus Documents on two new areas, *i.e.* the “Biology of the mosquito *Aedes aegypti*” of which engineered strains offer interesting possibilities to fight against dengue fever; and the “Use of micro-algae for production purposes” which is an important emerging trend. Detailed proposals and outline plans will be discussed at the next plenary meeting in April 2014.

The Working Group is also managing the BioTrack Product DataBase, in collaboration with the Task Force for the Safety of Novel Foods and Feeds (see section "BioTrack Online" below).

Future events:

- OECD Workshop on New Plant Breeding Techniques (title to be confirmed), OECD Paris, 10 February 2014
- 28th Meeting of the Working Group on the Harmonisation of Regulatory Oversight in Biotechnology, OECD Paris, 11-13 February 2014

Recent publications:

- 📖 [Consensus Document on the Biology of the Brassica Crops \(*Brassica spp.*\)](#) (2012)

Upcoming publications:

- 📖 *Proceedings of the OECD Conference on the Environmental Uses of Micro-Organisms (held in March 2012)*, exp. by the end of 2013
- 📖 *Consensus Documents on the Biology of - Sorghum; - Sugarcane; - Tomato*



- 📖 *Low Level Presence of Transgenic Plants in Seed and Grain Commodities: Environmental Risk/Safety Assessment, and Availability and Use of Information*

Web site: BioTrack Online www.oecd.org/biotrack

Contacts: Kazuyuki Suwabe, Bertrand Dagallier, Peter Kearns (ENV/EHS)



SAFETY OF NOVEL FOODS AND FEEDS

The OECD *Task Force for the Safety of Novel Foods and Feeds* (Task Force) addresses aspects of the safety assessment of foods and feeds derived from genetically engineered crops. The work aims to ensure that the types of elements used in risk/safety assessment, as well as the methods to collect such information, are as similar as possible amongst countries. The approach is to compare transgenic crops and derived products with similar conventional ones that are already known and considered safe in their use based on recognised experience. Harmonised methods and practice, as well as share of data are facilitated through the Task Force activities.

Consensus Documents

The main output is the set of *Consensus Documents* on compositional considerations of new varieties of specific crops (which can enter in the "novel" foods and feeds production). These documents compile a common base of scientific information on the major components of crop plants: key nutrients; toxicants; anti-nutrients and allergens where relevant. Other publications deal with general aspects to facilitate

harmonisation in safety assessment. These documents constitute a set of practical tools for regulators and risk assessors dealing with new transgenic varieties, with respect to human food and animal feed safety. To date, 21 Consensus Documents have been published on major crops, a mushroom, the animal feedstuffs obtained from transgenic plants, as well as the molecular characterisation of plants derived from modern biotechnology developed in common with the Working Group. This "Novel Food and Feed Safety" Series complement the Working Group publications on environmental safety.

The Consensus Document on Soybean (*Glycine max.*) was issued recently, revising the 2001 publication and incorporating recent information. In addition, work started on common bean (*Phaseolus vulgaris*) and oyster mushroom (*Pleurotus ostreatus*), as well as revision of the previously-published document on rice (*Oryza sativa*). Other activities are being contemplated, including composition of other plant species such as apple, cucurbits and others, animal compositional data, new plant breeding biotechnological techniques.

A compendium of the Consensus Documents on novel foods/feeds safety produced by the Task Force since its establishment is being prepared, for publication in 2013



Outreach and Engagement of Non Member Economies

The Task Force has increasingly involved the experience, scientific knowledge and interests of non member economies, which allows it to address a wider range of food and feed products of global interest. The development of activities on tropical and sub-tropical species was made possible through active co-operation with some of these countries and targeted expertise from international research organizations, FAO, WHO and others. South Africa, Brazil and Thailand, for example, were actively involved in the drafting of Consensus Documents on compositional considerations for cassava, sweet potato, papaya or sugarcane, while Brazil is leading the new project on common bean.

The Task Force benefits also from the expertise of specialists from Argentina, China, Latvia, Indonesia, Moldova, Philippines, and the Russian Federation. Such participation is supported by the OECD's Global Forum on Biotechnology.

Future event:

- 21st Meeting of the Task Force for the Safety of Novel Foods & Feeds, OECD Paris, 6-7 February 2014

Recent publication:

- 📖 [Revised Consensus Document on Compositional Considerations for New Varieties of Soybean \(*Glycine max.*\) : Key Food and Feed Nutrients, Anti-Nutrients, Toxicants and Allergens \(2012\)](#)

Upcoming publications:

- 📖 *Safety Assessment of Novel Foods and Feeds Derived from Transgenic Crops – OECD Consensus Documents – Volumes 1 & 2.* This compendium will collate the key documents produced by the Task Force between 2002 and 2012
- 📖 *Consensus Document on Compositional Considerations for New Varieties of Oyster Mushroom (*Pleurotus ostreatus*): Key Food and Feed Nutrients, Anti-Nutrients and Toxicants*

Web site: BioTrack Online www.oecd.org/biotrack



BIOTRACK ONLINE

The BioTrack Online information system is a mechanism by which the *Working Group on Harmonisation in Biotechnology* and the *Task Force for the Safety of Novel Foods and Feeds* make publicly available the outputs of their work, especially their Consensus/Guidance Documents described in sections above.

BioTrack Online offers also a public access to the Product Database. This database allows regulatory officials to easily share basic information on transgenic products derived from the use of modern biotechnology (mainly crop plants) and approved for commercial application in terms of food, feed or environmental safety. The database is updated, on a voluntary basis, by authorities of countries participating in the OECD biosafety activities. Products are listed with unique identifiers, and the information includes common/scientific names of the host organism and introduced genes, the events and traits, the regulatory elements and relevant links regarding approvals for release and use in countries. Information provided by Australia, Mexico and New Zealand on new or updated entries was added to the Product Database in the course of 2012, including now 185 entries of transgenic crops and flowers from 14 species. Some technical improvements were brought to the database early 2013: addition of a new column to collect information on “Method for detections-Reference materials”, enlargement of the “Unique Identifier” column for covering multiple stacked-event products, additional browsing “by trait”. Further updates and better presentation will be brought to the system in coming months.

Progress has been made on co-operation between the OECD’s Product Database, the FAO Global Portal on Food Safety, Animal and Plant Health, the CBD Biosafety Clearing-House, for interoperability between these web-based systems and facilitating the exchange of information on safety assessment of transgenic organisms and foods. This project responds to a request from the Codex ad hoc Task Force on Food Derived from Biotechnology, and a Memorandum of Cooperation signed between OECD and the Secretariat of the Convention on Biological Diversity. At the COP-MOP6 held in Hyderabad, India in October 2012, the Parties to the Cartagena Protocol on Biosafety recommended to strengthen the OECD-CBD collaboration, and for the OECD to extend the existing system of Unique Identifiers (UI) currently designed for transgenic plant varieties (the OECD UI system is used by main public as well as industry databases and documentation all over the world), to transgenic micro-organisms and animal species. This suggestion was presented to the WG-HROB in April 2013 and will be followed-up.

BioTrack Online also contains the regulatory contacts of OECD member countries and other stakeholders involved in biosafety and novel food/feed safety

Web site: BioTrack Online www.oecd.org/biotrack
Products Database www.oecd.org/biotrack/productdatabase

Contacts: Kazuyuki Suwabe, Bertrand Dagallier, Peter Kearns (ENV/EHS)



BIODIVERSITY ECONOMICS AND POLICY

Biodiversity work at the OECD focuses on the economics and policies needed to promote the effective conservation and sustainable use of biodiversity and ecosystem services. It includes areas such as biodiversity valuation, the use of economic instruments and other incentive measures, and development and distributional issues. The work also supports the Convention on Biological Diversity. The work

is undertaken under the OECD Working Party on Biodiversity, Water and Ecosystems (WPBWE),² a subsidiary body of the Environment Policy Committee (EPOC).

Biodiversity is fundamental to sustaining life, providing critical ecosystem services, such as food security, water purification, nutrient cycling, and climate regulation that are essential to support human well-being and economic growth. Despite the significant economic, social and cultural benefits provided by biodiversity and ecosystem services, biodiversity at the global level is declining. The *OECD Environmental Outlook to 2050: The Consequences of Inaction*, released in 2012, projects that without renewed policy efforts, a further 10% of the world's biodiversity will disappear between now and 2050. In the context of biodiversity, the Outlook identifies four areas where further action is critically needed. These are: reforming environmentally harmful subsidies; scaling up private sector engagement in biodiversity; improving knowledge and data for more effective biodiversity policy; and mainstreaming biodiversity into other sectors and policy areas of the economy.

New OECD work on biodiversity work focuses on *Scaling-up Finance Mechanisms for Biodiversity*. Released in May 2013, this publication examines the opportunities for scaling-up finance for biodiversity across six so-called “innovative financial mechanisms” as identified by the Convention on Biological Diversity. These are: environmental fiscal reform; payments for ecosystem services; biodiversity offsets; markets for green products; biodiversity in climate change funding; and biodiversity in international development finance. The book provides an overview of the general purpose and applicability of each financing mechanism, reviews the level of finance that each has mobilised and considers the extent to which each could be scaled up. It then examines the mechanisms' key design and implementation features that determine the extent to which the outcomes they produce are environmentally effective, economically efficient and distributionally equitable. It considers the possible safeguards and enabling conditions that are needed to successfully implement these mechanisms. Drawing on literature and case studies from around the world, the book aims to provide good practice insights and lessons learned for each the six mechanisms.

The publication also drew insights from an international expert workshop, held in Montreal on 12 May 2012, on “Finance Mechanisms for Biodiversity: Examining Opportunities and Challenges”. Jointly convened by the OECD, World Bank, GEF, and the European Commission, together with Sweden and India, it brought together more than 80 participants from governments, development agencies, UN organizations, non-governmental organizations and other experts. The objective of the workshop was to exchange insights and lessons learned from finance mechanisms for biodiversity, and to explore what are the most promising avenues for effectively scaling up finance for biodiversity.

On-going biodiversity work at the OECD is currently focusing on *Biodiversity Offsets and Biobanking*. This work will seek to establish good practice in the design and implementation of biodiversity offsets and biobanking programmes. Drawing on the theoretical literature on biodiversity offsets and on case studies from developed and developing countries, the work will highlight the key design features that should be considered in the development of biodiversity offset schemes to ensure that policies have the best chance of delivering biodiversity objectives in the most cost-effective manner. In doing so, it will consider the choices faced by policy makers regarding a scheme's general architecture, as well as the implications of the different detailed design features available to support their implementation. An OECD international expert workshop on this issue, bringing together relevant stakeholders to exchange experiences, will be convened in Paris on 6-7 November 2013.

Other on-going work on biodiversity at the OECD includes work on Policy Response Indicators for Biodiversity, and work on Biodiversity and Water Interlinkages.

Future events:

- Working Party on Biodiversity, Water and Ecosystems (WPBWE), 5th Meeting, OECD Paris, 7-8 November 2013
- OECD international expert workshop on Biodiversity Offsets and Biobanking, OECD Paris, 6-7 November 2013

² Formerly the Working Group on Economic Aspects of Biodiversity (WGEAB)

Recent publications:

- 📖 OECD (2013), *Scaling-up Finance Mechanisms for Biodiversity*.
- 📖 OECD (2012), *OECD Environmental Outlook to 2050: The Consequences of Inaction*. Includes a chapter on *Biodiversity*.
- 📖 OECD (2010), *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services*.

Upcoming publications and reports:

- 📖 *Green Growth and Biodiversity*
- 📖 *Biodiversity Offsets and Biobanking: issues in design and implementation*

Web site: www.oecd.org/env/biodiversity

Contact: Katia Karousakis (ENV/CBD)

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BIOMEDICINE AND HEALTH INNOVATION

Global Forum on Biotechnology: The Evolving Promise of the Life Sciences OECD, Paris, 12 November 2012

The last few decades have seen unprecedented developments in our understanding and application of the life sciences. Advances in biological and medical science continue to engender new areas for exploration and new disciplines. Yet recent progress in life sciences has arguably been less than expected, both in economic and scientific terms. For example, mapping the human genome has not quite achieved the comprehensive understanding of our genetic functioning that was originally anticipated.

The OECD and the ESRC Genomics Policy & Research Forum jointly organised a one-day Forum on 12 November 2012 in Paris. The event invited participants to address questions such as: “Do developments in the life sciences align with the expected promises envisaged 20-30 years ago? And as new biotechnologies continue to be developed and become ever more accessible and affordable, what can we learn about the ways that our expectations of technology shape the products and services that come to market?” The Forum concluded that the promise of biotechnology is not set but evolves with fresh scientific knowledge, novel laws and regulations and that the future of biotechnology needs to also integrate social and cultural dimensions.



The Global Forum comprised an opening address by Professor Anne Glover, Chief Scientific Advisor to the President of the European Commission, and plenary sessions on:

- *Retrospective: The Role of Expectations in Biotech Developments* - Understanding the economic and social expectations of biotech over the last thirty years
- *Health and Biomedicine in an Age of Convergence* - Focus on main anticipated future developments in health and medicine
- *Biotechnology of the Future: Industrial Biotechnology and Synthetic Biology* - Changing present-day expectations for industrial biotech
- *Marine Biotechnology: Legal, Scientific and IP Issues* - The value of marine resources and the special status of the World's oceans as a form of “commons”
- *Emerging Pathogens in the Environment* - Understandings of pathogen interaction in agricultural and forestry habitats and the links between disease and environmental change.

Global Public Health in an Age of Genomics

Advances in genomics have the potential to transform health and biomedicine through innovative products and services which facilitate our understanding of disease and our response to disease and enable the development and delivery of safer more effective treatments. Realising this potential will depend not only on technological and scientific advances but also on our ability to use and share knowledge, to commercialise research outputs and to operate in an environment of sound governance at ethical, legal and societal levels.

The report of this work by the Working Party on Biotechnology on genomics and global public health, in partnership with the ESRC Genomics Network, will be released in June 2013. The research was conducted over the summer of 2012 in seven self-selected countries, including both OECD member and non-member countries, and focused specifically on the application of genomics to stratified medicine – *i.e.* the use of genomic and other information to identify those sections of the population that are likely to respond particularly well or badly to a given medical intervention – and to infectious disease control in each country. A case study approach was adopted, with the aim of capturing the different ways in which genomic science and technology are being pursued for public health purposes in each of the different national settings.

Transnational patterns identified in the report include evidence that the use of genomics for infectious disease control is yielding significant public health benefits, in both diagnosis and tracking of infectious disease outbreaks and in the efficient production of effective vaccines. There also appear to be significant differences of priority between higher income countries (where stratified medicine can help in addressing their growing burden of chronic disease) and lower and middle income countries (where infectious disease control is the priority). International collaboration in both research and implementation is seen as essential if the full potential of genomics for infectious disease control is to be realised but less relevant for stratified medicine the benefits of which will be felt chiefly on a national or regional basis. While the findings are based on limited evidence from a small sample of participating countries, the data nonetheless suggest a significant divergence in the way that different countries are tending to adopt genomics for public health, which may have important implications for thinking about how genomic science and technology might best be employed in the interests of global public health.

Healthy Ageing and Biomedical Innovation for Dementia and Alzheimer's disease

Alzheimer's disease represents a particular, and very significant, challenge to population health, national prosperity and productivity. The disease is notable in that it represents an unmet health need in the fullest sense: our understanding of the disease is incomplete, diagnostics are imperfect and do not allow for prevention of the disease, treatments are typically focussed on treating symptoms not on finding the origins of the disease, and there is currently no known cure.

Dementia may provide a useful lens for timely work on science and technology policy in the health area now. Addressing the challenges of Alzheimer's disease, as one area of dementia and neurodegenerative disease, offers the opportunity to develop policy recommendations with significant positive economic impact building on recent WPB work in a number of areas including regulatory science; translation of science and technology; governance; and economic and social impacts.

A paper for WPB on biotechnology and the challenge of Alzheimer's disease will be available in summer 2013. The paper will outline the 'grand challenge' that Alzheimer's disease represents to global public health (including the significant social and economic impacts of the disease), will include an 'inventory' or 'stock-taking' of current initiatives to tackle this challenge, and will examine some areas in which the OECD can contribute to policy thinking in this area.

The project on *Healthy Ageing and Biomedical Innovation for Dementia and Alzheimer's disease* will continue within the WPB context in 2013 and beyond. Alzheimer's Disease (AD) will be used as a proxy to illustrate and characterise the main issues associated with innovation in biomedicine for dementia and age related disabilities. The project will cover in details issues such as the challenges, government policy approaches and good practice in biomedical innovation for AD, looking specifically at public/private partnerships set up to support translational research for AD.

Recent Publications:

- 📖 OECD (2013), [Emerging trends in biomedicine and health technology innovation: addressing the global challenge of Alzheimer's](#), (in press)
- 📖 OECD (2010), *Biomedicine and Health Innovation: Synthesis Report*
- 📖 OECD (2011), *Policy Issues For The Development And Use Of Biomarkers In Health*

Web site: www.oecd.org/sti/biotechnology

Contact: Jacqueline Allan (STI/STP); Marie-Ange Baucher (STI/STP)

OECD/HUGO Session at the Joint Conference of the Human Genome Meeting 2013 and the 21st International Congress of Genetics – 13 April 2013

The WPB, together with the Human Genome Organisation (HUGO), organised an event on “*Integrating Omics and Policy for Grand Challenges: Healthy Ageing*” in Singapore on 13 April 2013. It took place in the context of the Joint Conference of the Human Genome Meeting 2013 and the 21st International Congress of Genetics. The main topic of the two and a half hour OECD/HUGO session was healthy ageing and Alzheimer's disease. It was an opportunity to discuss the latest policy developments, challenges and obstacles in areas addressing this disease as a proxy for neurodegenerative diseases more generally. The session focused on latest advances in “omics” technologies for healthy ageing and the policies and practices needed to facilitate the safe development, approval and use of innovative diagnostics and therapies. In particular the session focused on issues such as:

- The genetics of healthy ageing
- Integrative “omics” in tackling public health issues for ageing
- Challenge driven innovation policy for healthy ageing
- Navigating the regulatory challenges of innovative technologies for healthy ageing

A report of the workshop will be available in summer 2013.

Web sites: www.oecd.org/sti/biotechnology; www.hgm2013-icg.org/scientific_programme.html

Contact: Jacqueline Allan (STI/STP) ; Marie-Ange Baucher (STI/STP)

OECD Expert Consultation on “Unlocking Global Collaboration to Accelerate Innovation for Alzheimer's Disease and Dementia”

Recent work by the OECD has indicated that a number of complementary actions will be needed to help to tackle the challenges associated with Alzheimer's disease. International measures will be necessary to accelerate innovation in areas of critical need by leveraging advances in biomedicine and the sharing of data at a global scale. A joint expert consultation between the OECD WPB and the OECD Information, Computer and Communication (ICCP) Committee will be held in Oxford on 20-21 June 2013. This meeting is being supported by the Global Coalition on Ageing and by Oxford University (Harris College).

The Expert Consultation will begin to identify a framework for policy making and stakeholder engagement on these particular issues. To do so, the Consultation will:

- Provide a space for country experts, policy makers and other stakeholders to share views on the main scientific, technological and policy challenges Alzheimer's raises;

- Create an opportunity for multidisciplinary exchange;
- Capture views on how to move forward and develop concrete ideas for OECD action.

Web site: www.oecd.org/sti/biotechnology

Contact: Jacqueline Allan (STI/STP); Elettra Ronchi (STI/ICCP); Marie-Ange Baucher (STI/STP)

Innovative Governance in Biomedicine and Health Innovation

The Working Party on Biotechnology is concluding the current phase of work which began with an OECD workshop in September 2010 on ‘*Better Health through Bio-medicine: Innovative Governance*’. The workshop brought together policy makers, regulators, academic experts, private and public sector researchers and other interested parties from over 20 countries to discuss the latest developments in the biomedical sector, explore the challenges for governance of this sector and consider how to foster more effective health innovation. The workshop concluded that innovations in governance will require innovations in and new tools for regulatory science, drawing on the latest advances in science and research, in particular on new high-through put ‘omics’ and related technology. The project, under the theme of “*Enabling Innovation in Biomedicine and Health Technology*”, is considering how regulatory frameworks or governance might adapt to meet the needs of the evolving global, and increasingly complex, science and technology landscape. The report of this project will be available in mid-2013.

Recent Publications:

- 📖 OECD (2010), *Biomedicine and Health Innovation: Synthesis Report*
- 📖 OECD (2011), *Policy Issues For The Development And Use Of Biomarkers In Health*
- 📖 OECD (2013), *Global Public Health in an Age of Genomics* (in press)

Web site: www.oecd.org/sti/biotechnology

Contact: Jacqueline Allan (STI/STP); Marie-Ange Baucher (STI/STP)



KNOWLEDGE NETWORKS AND MARKETS IN THE LIFE SCIENCES

There is a proliferation of initiatives which aim to bring together elements of research infrastructure for the life sciences and to simplify the processes for learning about, accessing and utilising sometimes dispersed knowledge and intellectual assets. The common goal of these initiatives is to leverage innovative capacity by creating interconnected webs of knowledge that exploit external expertise. Recent advances in information technology make these initiatives possible –for example the increased capacity for data storage, improved transmissibility of data across the Internet and better software for data analysis – as has the creation of governance systems that regulate access to and use of data. In the report, such initiatives are referred to as “knowledge networks and markets” (KNM).

As the foundation for the work, an OECD *Knowledge Markets in the Life Sciences* workshop was held in Washington, DC, in October 2008 to discuss the nature of new exchange mechanisms, the forces that are driving their creation, and their implications for the innovation process. It was one of the first workshops dedicated to understanding the potential of open science and open innovation approaches in the life sciences. Experts participated from a cross-section of relevant fields – including information technology (IT) and data management companies, pharmaceutical and biotechnology firms, public research organisations, government funding and regulatory agencies, technology-transfer groups, clinicians, and patient organisations. The aim of the workshop was to help policymakers understand the importance of new knowledge networks and markets (KNM) and the role that policy can play in facilitating their emergence. Many of the case studies in the report were based on discussions that began at the workshop.


The 2012 report introduces the concept of Knowledge Networks and Markets; discusses the organisations and mechanisms that are emerging to share and to trade an increasing variety of knowledge-intensive assets; and describes several case studies which illustrate a variety of open knowledge management approaches. It explores the technological, economic and industrial environments that have led to the rise of KNM. The report also identifies some early policy lessons about the role of governments in the creation and maintenance of KNM.

Recent Publication:

📖 OECD (2012), Knowledge Networks and Markets in the Life Sciences

Web site: www.oecd.org/sti/biotechnology

Contact: Jacqueline Allan (STI/STP)

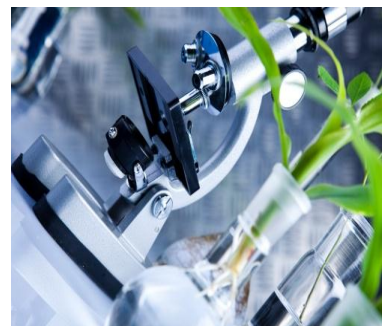


INDUSTRIAL BIOTECHNOLOGY

Council Recommendation on Assessing the Sustainability of Bio-based Products

The draft Council Recommendation was prepared by the Task Force on Industrial Biotechnology at the request of the Working Party on Biotechnology. Following public consultation on the draft Recommendation during July and August 2012, including its distribution to 250 individuals/organisations, from whom 118 comments were received, the draft Recommendation was amended. The final version of the Recommendation passed through the Executive Committee on July 11, 2012 and was approved by Council on July 17 for publication and dissemination.

The Council recommends that countries develop and implement national frameworks for assessing the sustainability of Bio-based Products taking into consideration environmental, economic and social impacts throughout the whole life cycle (cradle-to-grave). The Recommendation highlights the importance of building consensus amongst stakeholders including SMEs, ensuring international consistency of approaches; using assessment methodologies and indicators that are science-based, making data publicly available and promoting awareness of the sustainability aspects of Bio-based Products.



The Council Recommendation can be downloaded from:
<http://webnet.oecd.org/OECDACTS/Instruments/ListBySubjectView.aspx>,

Recent Publications:

- 📖 OECD (2010), *Towards the Development of OECD Best Practices for Assessing the Sustainability of Bio-based Products*. OECD Publishing, Paris.
- 📖 OECD (2011), *Industrial Biotechnology and Climate change*. OECD Publishing, Paris.
- 📖 OECD (2011), *Future Prospects for Industrial Biotechnology*.

See also:

- Pavanan, K.C., R.A. Bosch, R. Cornelissen and J.C. Philp (2013), Biomass sustainability and certification. *Trends in Biotechnology*, In Press.
[http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(13\)00027-9](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(13)00027-9)
- Gillespie, I., R.C. Wells, A. Bartsev and J.C. Philp (2011), OECD outlook on prospects in industrial biotechnology. *Industrial Biotechnology* 7, 267-268.
- <http://online.liebertpub.com/doi/abs/10.1089/ind.2011.7.267>

- Gillespie, I.M.M. and J.C. Philp (2013), Bioremediation, an environmental remediation technology for the bioeconomy. *Trends in Biotechnology* 31, 329-332.
- [http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(13\)00028-0](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(13)00028-0)
- Kuyukina, M.S., I.B. Ivshina, S.O. Makarov and J.C. Philp (2012), Risk assessment and management of terrestrial ecosystems exposed to petroleum contamination. Chapter 10 in: *Environmental Contamination*, pub. In-Tech Publishing, ISBN 978-953-308-86-0, pp. 177-198.

Web site: www.oecd.org/sti/biotechnology

Contact: Jim Philp (STI/STP)



SYNTHETIC BIOLOGY

The OECD Working Party on Biotechnology, the US National Academies of Science and the Royal Society organised an international symposium entitled “*Opportunities and Challenges in the Emerging Field of Synthetic Biology*” (Washington, DC on 9-10 July 2009) to identify the main challenges and opportunities of synthetic biology. The symposium aimed to contribute to fostering the safe and efficient development of synthetic biology by identifying issues and areas for future study and informing policy-makers. A synthesis report capturing discussion at the Symposium was published in May 2010 (OECD-Royal Society joint publication, 2010: <http://www.oecd.org/dataoecd/23/49/45144066.pdf>).

Since that time, the OECD has launched a dialogue with experts and leaders in the field to identify some of the challenges to development of the field and areas in which the OECD can make a positive contribution. In June 2011, the OECD held an expert meeting in synthetic biology in collaboration with the BioBricks Foundation and the SynBio5.0 meeting at Stanford University. Based on that meeting, the OECD has been taking forward work on infrastructure for synthetic biology; ip access and sharing; and governance.

Work on infrastructure of synthetic biology is looking at the role of synthetic biology in the bioeconomy, the necessary infrastructure and challenges to its development. This work was launched during the OECD/HUGO summit to be held in partnership with the Human Genome Organisation at its annual meeting in Sydney, Australia in March 2012 (*see dedicated section below*). Work on intellectual property: access and sharing, builds on previous Working Party on Biotechnology work on "Knowledge Networks and Markets" and on "Collaborative Mechanisms" (*see relevant sections*) to look at the challenges to development of KNM in synthetic biology. This work is expected to provide insights which will benefit other fields arising from technology convergence. Emerging technology and converging technologies often represent challenges to the existing governance structures, and it is important to ensure existing structures do not represent a barrier to innovation. The field of synthetic biology involved converging technologies as it involves not just biology or DNA recombination, but other fields such as engineering, computational technology and nanotechnology. In many ways it also represents an emerging technology, one that is now moving beyond modification of genetic material toward the design and construction of new biological functions, structures and systems not found in nature. This work is looking at potential barriers to governance of innovations arising from the field of synthetic biology and may have application to other technologies.

This report will be published in mid-2013.

Recent Publication:

OECD, Royal Society (2010), *Symposium on Opportunities and Challenges in the Emerging Field of Synthetic Biology: Synthesis Report*

See also:

- Philp, J.C., R.J. Ritchie and J.E.M. Allan (2013), Synthetic biology, the bioeconomy and a societal quandary. *Trends in Biotechnology* 31, 269-272.
[http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(13\)00023-1](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(13)00023-1)

Web site: www.oecd.org/sti/biotechnology/synbio

Contact: Jim Philp, Jacqueline Allan (STI/STP)



MARINE BIOTECHNOLOGY

Since December 2010, the OECD Working Party on Biotechnology has been engaged on work on marine biotechnology, recognising its potential to make an important contribution to meeting global challenges and contributing to the bioeconomy, as the source of greener more sustainable and smarter economies. An OECD Global Forum on Biotechnology was held in Vancouver, Canada, in 2012 to discuss the opportunities and challenges of marine biotechnology. The forum, entitled *Marine Biotechnology - Enabling Solutions for Ocean Productivity and Sustainability*, brought together policymakers, regulators, industry leaders, academics and social and natural scientists from the 34 OECD countries and from non-member and developing countries to review the most recent research and debates around the field, and to discuss how to realise the potential of marine biotechnology.



Insights gained from expert speakers and roundtable discussions over two days were combined with substantive background research by the OECD's Working Party on Biotechnology to delineate the opportunities of marine biotechnology and those areas of the field requiring further attention.

A report, based on that workshop and significant additional work and to be released in mid-2013, considers the potential of marine biotechnology to contribute to economic and social prosperity by making use of recent advances in science and technology. It discusses scientific and technological tools at the centre of a renewed interest in marine biotechnology, contributing to a new bioeconomy sector in many countries, and offering potential new solutions to global challenges. The report examines how these advances are improving our understanding of marine life and facilitating access to and study of marine organisms and ecosystems, and it considers the largely untapped potential of these bioresources. This promise is considered alongside the challenges associated with the development of these resources which exist within complex ecosystems and fluidly distributed in a vast, largely shared, environment. The report makes the case for a new global framework for the sustainable development of marine biotechnology and identifies some areas that will benefit from focused attention as governments develop policies to support marine biotechnology. In addition to this prospective view, it also identifies some early policy lessons learned by governments leading attempts to benefit from bioresources.

Web site: www.oecd.org/sti/biotechnology

See also:

- Ritchie, R.J., K. Guy and J.C. Philp (2013), Policy to support marine biotechnology based solutions to global challenges. *Trends in Biotechnology* 31, 128-131.
[http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(13\)00021-8](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(13)00021-8)

Contact: Jim Philp (STI/STP), Jacqueline Allan (STI/STP)



ENVIRONMENTAL BIOTECHNOLOGY

Policy Issues for Bioplastics

Bioplastics and bio-based plastics account, to date, for a small proportion of the overall plastics market, but they are experiencing high market growth rates. Bio-based polyethylene (PE) has entered the market, to be followed soon by bio-based polypropylene and polyvinylchloride. This indicates a significant shift into large-scale application and, in parallel, bioplastics as a potential contributor to addressing environmental issues have moved up the political agenda. During 2012, work by the OECD Working Party on Biotechnology (WPB) has focused on identifying the barriers and policy issues for bioplastics, and will result in a policy report to be published in mid-2013

The WPB has also been exploring wider barriers to environmental biotechnology and will be formulating guidance on how the barriers might be overcome. To start the process, a [Workshop on Biotechnology for Environment in Future: Science, Technology and Policy](#) was held on 14-18 September 2010 in Rimini, Italy. The workshop aimed at building consensus on the scope of main issues that Environmental Biotechnology R&D faces and on the ways to overcome those. The report is published and can be downloaded from here: DOI: [10.1787/23074957](#).

Recent Publications:

- OECD (2013), *Biotechnology for the Environment in the Future: Science, Technology and Policy*. OECD Publishing, Paris. DOI: [10.1787/23074957](#)

See also:

- Philp, J.C., A. Bartsev, R.J. Ritchie, M.-A. Baucher and K. Guy (2013), Bioplastics science from a policy vantage point. *New Biotechnology*, In Press. http://www.sciencedirect.com/science?_ob=ArticleListURL&_method=list&_ArticleListID=-269317284&_sort=r&_st=4&_acct=C000049020&_version=1&_urlVersion=0&_userid=946274&_md5=b71eeb6f4d517212716cfb70d116dde6&searchtype=a
- Philp, J.C. (2012), Bioplastics science from a policy vantage point. *Environmental Engineering and Management Journal* 11, S89. http://omicron.ch.tuiasi.ro/EEMJ/issues/vol11/vol11no3supl_s3.htm
- Philp, J.C., K. Guy and R.J. Ritchie (2013), Biofuels development and the policy regime. *Trends in Biotechnology* 31, 4-6. [http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(12\)00166-7](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(12)00166-7)
- Philp, J.C., R.J. Ritchie and K. Guy, (2013), Biobased plastics in a bioeconomy. *Trends in Biotechnology* 31, 65-67. [http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(12\)00204-1](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(12)00204-1)
- Philp, J.C., R.J. Ritchie and J.E.M. Allan (2013), Biobased chemicals: the convergence of green chemistry with industrial biotechnology. *Trends in Biotechnology* 31, 219-222. [http://www.cell.com/trends/biotechnology/abstract/S0167-7799\(12\)00226-0](http://www.cell.com/trends/biotechnology/abstract/S0167-7799(12)00226-0)

Web site: www.oecd.org/sti/biotechnology

Contact: Jim Philp (STI/STP)

BIOTECHNOLOGY STATISTICS

The *OECD Key Biotech Indicators* (KBI) will be updated in July and again in December. The latest indicators are available at: www.oecd.org/sti/biotechnology/indicators

The KBI data were also used in the OECD (2013), *OECD Factbook 2013: Economic, Environmental and Social Statistics* publication: www.oecd-ilibrary.org/factbook

Contact: Brigitte van Beuzekom (STI/EAS)

BIOENERGY AND BIOFUELS AT TRADE AND AGRICULTURE DIRECTORATE

The subject of bioenergy touches various areas, in particular, scientific developments, environmental effects, energy balances and agricultural market economics. In that context, the OECD has launched an overarching research program. Led by the Trade and Agriculture Directorate (TAD), it incorporates expertise from other directorates of the OECD as well as the International Energy Agency.

The OECD work on bioenergy focuses on a comprehensive compilation of data and information, the categorization of the variety of support policies and the quantitative analysis of bioenergy policy measures.



Five years ago, OECD published an economic assessment of biofuel support policies (OECD, 2008a). It concluded that government support of biofuel production in OECD countries was costly, with a limited impact on reducing greenhouse gases and improving energy security, however with a significant impact on world crop prices. In a context of policy-driven mandates for the blending of biofuels in transportation fuels, first generation biofuels derived from agricultural food commodities have developed strongly over the past few years. The study highlighted that other forms of bioenergy, such as bioheat, biopower and biogas, could represent economically more viable and environmentally more efficient ways to reduce GHG. Another publication (OECD, 2008b) presented the technology and costs associated with the bioheat, biopower production as well as second generation biofuels. Then another study (OECD, 2010) focused on the development and the environmental performance of those alternative forms of energy. They are mostly generated with non-agricultural feedstocks and, to a lesser extent, agricultural residues and wastes. Main technologies to convert biomass to heat and/or electrical power include the direct combustion, the gasification and the anaerobic digestion producing biogas. Combined heat and power generation plants allow improving the energy efficiency with the use of the remaining heat after power generation for space heating or in industrial applications.

The OECD-FAO Agricultural Outlook annual report covers biofuel market and related policy developments. The 2013 Agricultural Outlook (projecting on the 2013-2022 period) is available at www.agri-outlook.org. It includes a discussion on the uncertainties related to the US Biofuel Mandates and in particular to their implementation through the US EPA, in addition to its regular chapter on biofuels.

The OECD TAD is in the process of creating a detailed database of policies in the fertilizer and biofuel sectors of OECD and several Emerging Economies, and of analysing these data with respect to their

implications for agricultural markets and incomes. The database should become publicly available within the next few weeks.

In collaboration with the Brazilian foundation Fundacao Getulio Vargas (FGV Projetos), the USDA and the European Commission, TAD has started a comparative analysis of the three key biofuel supply chains cane-ethanol, corn-ethanol and rape-biodiesel.

Publications:

- 📖 OECD (2008a), *Biofuel Support Policies – An Economic Assessment*
[en français]: OCDE (2008a), *Politiques de soutien des biocarburants : une évaluation économique*
- 📖 OECD (2008b), *Developments in Bioenergy Production Across the World: Electricity, Heat and Second Generation Biofuels*
- 📖 OECD (2010), *Bioheat, Biopower and Biogas: Developments and Implications for Agriculture*
- 📖 OECD/FAO (2013), OECD-FAO Agricultural Outlook 2013-2022 – "[Biofuels](#)" chapter

Web site: www.oecd.org/tad/bioenergy

Contact: Céline Giner (TAD/ATM), Martin Von Lampe (TAD/PTA)



BIOENERGY AND BIOFUELS AT THE IEA RENEWABLE ENERGY DIVISION

The activities of the International Energy Agency (IEA), Renewable Energy Division, focus on policy and market analysis, system integration issues, analysis of renewable energy technologies and research, development and demonstration issues and priorities, amongst others.



Recent work in the division related to bioenergy includes medium-term projections for the development of biomass electricity and biomass heat around the world as part of the forthcoming Medium-Term Renewable Energy Market Report 2013 (launch: 26 June). A similar analysis, focussing on the biofuels sector and its development in the next 5 years, will also be included in the Medium-Term Renewable Market Report 2013, and has been published in the Medium-Term Oil Market Report 2013 (published 14 May).

An IEA insights paper on renewable heat is currently under development, and will be launched in Q3 2013. The paper will address the status of biomass and other renewable energy sources for use as heat in industry and buildings, around the world. Based on the analysis of the existing policy framework and mechanisms for the support of renewable heat in different countries, the paper will provide policy recommendations for the development of renewable heat in different end-use sectors.

Publications:

- 📖 Medium-Term Oil Market Report 2013; *Market Trends and Projections to 2018*, available at www.iea.org/w/bookshop/add.aspx?id=450
- 📖 Medium-Term Renewable Energy Market Report 2013, *Market Trends and Projections to 2017*, to be available 26 June 2013; access to 2012 edition: www.iea.org/w/bookshop/add.aspx?id=432

Web site: <http://www.iea.org/topics/renewables/>

Contacts: Anselm Eisentraut, Adam Brown (IEA/EMS/RED)



WORKSHOP ON ALTERNATIVE FUELS AND THEIR INFRASTRUCTURES – November 2012

“*The Bioeconomy to 2030*” document (issued by the OECD in 2009) described how, in the field of health related biotechnology, a misalignment of stakeholder interests (factors and actors) is likely to hinder transformative innovation. Similar misalignments apply to other sectors of the economy, e.g. alternative fuels and their infrastructures.

The OECD International Futures Programme (STI/IFP), in collaboration with the International Energy Agency (IEA) and the International Transport Forum (ITF), is holding an international workshop at OECD Headquarters on 30th November 2012 on the theme of future infrastructures for alternative fuel vehicles: infrastructures for battery-powered and plug-in electric vehicles, hydrogen/fuel cell vehicles and vehicles powered by biofuels.

Despite their considerable potential, progress in the development and more widespread introduction of alternative transport fuels has been markedly slow so far. High costs relative to fossil fuels, technological problems and public acceptance are among the main obstacles today; and, there is considerable uncertainty as to how cost structures, technological progress and public perceptions might evolve in the coming years.

However, an important additional dimension is the difficulties that have been encountered in most countries in setting up the infrastructure required to support the widespread introduction of alternative transport fuels. Battery-driven electric vehicles and transport means using hydrogen or biofuels require dedicated infrastructure, most of which does not yet exist. There is today a better sense of what is required technically to put the infrastructure in place, what the costs are likely to be, and what levels of investment are likely to be required. But importantly, there is considerable disagreement among the various actors along the infrastructure value chain as to what their respective roles should be, who should finance the infrastructure, and who should take the lead. In particular, there are issues for example surrounding pricing, regulation, risk-bearing, government support and guarantees, scaling-up, security, and also technical obstacles.

The one-day workshop, open to OECD and IEA participants (and invited external experts) will offer an opportunity to learn and compare how countries around the world have attempted to align these different stakeholder interests in setting up infrastructure for alternative transport fuels; to identify possible examples of good practice; explore viable business models and examine the role that could be played by government.

Publication:

📖 OECD (2009), *The Bioeconomy to 2030 – Designing a Policy Agenda*. Main findings and policy conclusions, executive summary, and process to order a copy of the full document are available at <http://www.oecd.org/futures/bioeconomy/2030>

[en français]: OCDE (2009), [*La Bioéconomie à l'horizon 2030 : quel programme d'action ?*](#)

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AGRICULTURAL INNOVATION SYSTEMS



Innovation within the global food and agriculture system is needed to increase productivity growth and competitiveness and sustainable resource use, and meet global food security and climate change challenges in the decades ahead. At agriculture Ministers' request the OECD Secretariat undertook a project on agricultural innovation in OECD countries and emerging economies, aiming to analyse recent developments in agricultural innovation systems, provide a forum for exchange of experiences, develop a framework for analysing the role of the government in fostering innovation in the agri-food sector, and explore the diffusion of innovation at farm-level.

Work on agricultural innovation and productivity in the OECD Trade and Agriculture Directorate (TAD) first considered the role of innovation in increasing productivity (OECD, 2010; 2011). It also analysed developments in farm productivity and agricultural innovation systems and the impact of policies on innovation and productivity in agriculture (OECD, 2012b). A Conference on Agricultural Knowledge Systems (AKS) was organised in June 2011 to explore how to foster the development and adoption of innovation at national and global level, in order to meet global food security and climate change challenges (OECD, 2012a). Many countries and international organisations are aware that *status quo* is not an option and that creating an effective and responsive environment for innovation requires greater efforts. The potential role of biotechnologies in increasing productivity and facilitating adaptation to climate change was recognised by many participants. The Conference provided useful material for reports published in 2012 and 2013 (see below).

The final outcome of the 2011-12 project is a report on the role of the government in fostering innovation in the agri-food sector, which develops a framework for analysing a wide range of policies that affect agricultural innovation (OECD, 2013). This framework is being applied to three pilot country reviews (Australia, Brazil and Canada) to test feasibility and provide further guidelines to how governments can improve the creation and adoption of innovation in agriculture and the agri-food sector. Further work for 2013-14 will also consider specific issues more in-depth: the development of public-private partnerships; methods and practices for the evaluation of innovation systems; and an analysis of the determinants of productivity growth, including innovation and agricultural policies.

Publications:

- ☞ Alston, J. (2010), "The Benefits from Agricultural Research and Development, Innovation, and Productivity Growth", *OECD Food, Agriculture and Fisheries Working Paper No. 31*
- ☞ OECD (2011), *Fostering Productivity and Competitiveness in Agriculture*, OECD publishing
- ☞ OECD (2012), *Improving Agricultural Knowledge and Innovation Systems: OECD Conference Proceedings*, OECD publishing.
- ☞ OECD (2012b), *Agricultural Policy Monitoring and Evaluation 2012: OECD Countries*, OECD Publishing. http://dx.doi.org/10.1787/agr_pol-2012-en
- ☞ IO (2012), *Sustainable agricultural productivity growth and bridging the gap for small-family farms*, Interagency Report to the Mexican G20 Presidency, with contributions by Bioversity, CGIAR Consortium, FAO, IFAD, IFPRI, IICA, OECD, UNCTAD, Coordination team of UN High Level Task Force on the Food Security Crisis, WFP, World Bank, and WTO, 12 June 2012. Available at: www.oecd.org/tad/agriculturalpoliciesandsupport/50544691.pdf.
- ☞ OECD (2013), *Agricultural Innovation Systems: A Framework of Analysing the Role of Government*, OECD publishing, to be published in June 2013

Web site: www.oecd.org/agriculture/policies/innovation

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AGRICULTURAL SEED AND FOREST REPRODUCTIVE MATERIAL CERTIFICATION SCHEMES

The following three criteria namely; distinctness, uniformity and stability are used for defining crop varieties and form the basis for agricultural seed development and trade. Identification and minimum purity criteria are important components of sustainability, especially in the case of hybridisation and genetic modifications. For forest reproductive material reliability depends on several factors including local identification, regions or provinces, selection and breeding.

The **OECD Seed Schemes**, established in 1958, are a set of international standards for field inspection and certification of the most important agricultural and vegetable species. The Schemes aim to harmonise seed certification; thereby facilitating and promoting international seed trade. The seven Seed Schemes establish rules and standards for varietal inspection and certification of OECD listed varieties. Fifty-eight countries across the world are currently a member of one or more of the OECD Seed Schemes. The *List of Varieties Eligible for OECD Certification* covers 200 species – including all major crops – and nearly 50 000 varieties. The electronic database of the list of varieties was launched in 2011 and provides an online search facility for OECD listed varieties. Among the emerging issues in the OECD Seed Schemes are the role of biochemical and molecular techniques in describing and identifying varieties; the extension of the seed lot size for herbage seed; guidelines for complex multiplications abroad; electronic means of certification and certification rules for hybrid varieties of triticale. In order to assess the current and future needs of international certification, the Standing Working Group on Varietal Purity and Varietal Identity develops new definitions and procedures to be introduced into the Schemes.

The current **OECD Forest Seed and Plant Scheme** was introduced in June 2007. This Scheme encourages the production and use of forest reproductive material that have been collected, processed and marketed in a manner that ensures their trueness to name. It is currently implemented by 25 countries. The Scheme's rules were recently completed by the new "Qualified" category (for seed orchards) in 2010. The 2012 Annual Meeting of the Forest Seed and Plant Scheme approved the most advanced "Tested" category and its endorsement by the Committee for Agriculture and the adoption by the Council is under process. Moreover, the Scheme's started to work on new projects such as the application of the Scheme's rules for multifunctional trees, legal right access and benefit sharing, the revision of the use of region of provenances and the customisation of the Scheme to tropical conditions.

Future events:

- Forest Seed and Plant Scheme, Annual Meeting of the National Designated Authorities: 24-26 Sept. 2013 (OECD Paris)
- Agricultural Seed Schemes, Annual Meeting of National Authorities: 9-13 June 2014 (Zagreb, Croatia)



Recent Publications:

- 📖 List of Varieties Eligible for Seed Certification; January 2013 (*available in the electronic database*)
- 📖 OECD Seed Schemes: Rules and regulations; 2013 edition
[français]: Systèmes des semences de l'OCDE : Règles et directives ; édition 2013
- 📖 Guidelines for control plot tests and field inspection of seed crops (2012)
[fr.]: Ligne directrices pour les essais en parcelle de contrôle et l'inspection des cultures de semences

- 📖 Guidelines for the Authorisation of some Certification Activities under the OECD Seed Schemes (2012) [fr.]: Lignes directrices pour l'autorisation de certaines activités de certification selon les Systèmes des semences de l'OCDE
- 📖 A Synthesis of international regulatory aspects that affect seed trade (2012)
[fr.]: Synthèse des aspects réglementaires internationaux concernant le commerce des semences
- 📖 OECD Forest Seed and Plant Scheme "2012" (Rules and Regulations)
[fr.]: Système de l'OCDE pour les semences et plants forestiers "2012" (Règles et Directives)

Web sites: www.oecd.org/tad/seed ; www.oecd.org/tad/forest

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CO-OPERATIVE RESEARCH PROGRAMME: BIOLOGICAL RESOURCE MANAGEMENT FOR SUSTAINABLE AGRICULTURAL SYSTEMS



The OECD Co-operative Research Programme (CRP), which gathers 24 OECD countries, is based on the observation that multi-disciplinary agri-food research is needed to address the gaps in knowledge, deepen understanding and enhance the scientific base of policy. The objectives of the CRP are the following: to provide a sound scientific knowledge base to agricultural policy-making; to contribute to an informed public debate on current and emerging agro-food issues and help resolve conflicting views; and to promote scientific understanding and standards between major regions of OECD.

Operational features of the Programme involve supporting and promoting international co-operation and networking in the field of basic and applied research. It awards fellowships to scientists from a CRP member country to conduct research projects in another CRP member country, and supports financially workshops to address agro-food issues that are high on the science/policy agenda of Members. The CRP strategy emphasises the need to engage a range of scientific disciplines including the natural sciences, social sciences and the humanities in an interactive dialogue. Three themes will be addressed by the Programme during its mandate period (2010-2014): 1) The Natural Resource Challenge; 2) Sustainability in practice; and 3) The Food Chain.

Conferences (Co-)Sponsored by the Programme in 2013:

The CRP is sponsoring a total of 9 conferences in 2013. Information on these events is posted on the CRP website as it becomes available: www.oecd.org/agriculture/crp

- *Best Practices in Documenting Negligible Risk for Trichinella in Pork, Berlin, Germany, 14-15 March 2013*

The objective of this conference is to summarise all available information on the performance of available direct and indirect detection methods (artificial digestion and serology) for *Trichinella* in pork and to use these performance specifications to develop a set of guidelines for use of these methods in establishing statistically defensible estimates of the risk of *Trichinella* in pig populations. It aims to facilitate expert discussion and consensus in establishing guidelines for *Trichinella* surveillance and provide scientifically sound guidance to national and international regulatory authorities, notably Codex Alimentarius and OIE. It will also identify specific gaps in knowledge which may require further scientific investigation to best support regulatory decisions.

- *Livestock Disease Policies: Building Bridges between Animal Sciences and Economics*, OECD, Paris, France, 3-4 June 2013; <http://www.oecd.org/tad/agricultural-policies/livestock-diseases-2013.htm>

Contagious livestock diseases can cause major harm to human and animal health, to firms, and to consumers and taxpayers. The impacts of diseases and of prevention and control measures reach beyond national borders. Governments are increasingly acting to prevent and control livestock diseases, while international organisations develop codes, guidelines and programs to enhance international co-operation and efficient management of diseases. The economic costs, such as compensation for culling of animals, can be high and difficult to predict. The evolution of a disease or outbreak can also be uncertain. Economists, epidemiologists and policy makers need to communicate clearly with each other to ensure better policies for managing livestock diseases.

In this conference, participants from national governments and international organisations will examine how economics, working together with animal sciences, can contribute to a comprehensive and efficient management of livestock disease risks.

- *Reducing antimicrobial usage in agriculture and aquaculture: beyond regulatory policy*, Utrecht, Netherlands, 1-3 July 2013

This conference will deal with the problem of misuse and overuse of antimicrobials in animal and aquaculture production. Antimicrobial resistance is a serious problem for a society faced with the moral and ethical conundrums concerning the duty to provide safe, nutritious food and keep animals healthy, while minimizing risks to human health. Resistance poses serious consequences for both animal health and public health in the form of potential therapeutic failure. The primary aim of the conference will be to identify factors that impact the decision-making in different settings (e.g., countries, types of production), to examine the barriers and opportunities that exist for engaging more fully in prudent uses, and to describe a variety of approaches and factors that should be considered when future policy at any level is being developed for prudent use of antimicrobials.

- *Exploiting the explosion of information associated with next generation omics to tackle Shigatoxin producing Escherichia coli (STEC) in global food production systems*, Charlotte, N. Carolina, USA, 27-28 July 2013

Food safety is a key consideration in the formulation of regulations and policies designed to enhance the security, defence and economic robustness of national agri-food sectors. Individual nations have adopted explicit policies to deal with the emergence of STEC disease and the risk of food contamination. The needed risk assessments would clearly benefit from the improved availability of accurate information about the distribution and diversity of STEC in specific geographic locations, which is a key deliverable from the present proposal. Hence the workshop will provide a forum to initiate measures to improve the quality and availability of scientific knowledge about STEC that is needed to inform new policies, regulations and decision that govern domestic agri-food systems and international trade.

- *Wheat Genetic Symposium, 12th International (12th IWGS)*, Yokohama, Japan, 8-14 Sept. 2013

The agricultural G20 agreed the Ministerial Declaration on 'Action plan on food price volatility and agriculture', Paris, 22 and 23 June 2011. It issued a statement to challenge the threats increasing wheat production in the long run, and to promote International Research Initiative for Wheat Improvement (IRIWI). IWGS will be a great opportunity to launch an international discussion, highlighting novel scientific knowledge and technologies of plant genetics, genomics and breeding which will contribute to sustainable wheat production, food hygiene and food supply worldwide.

- *Conservation Tenders in Developed and Developing Countries - Status Quo, Challenges and Prospects*, Boppard, Germany, 11-14 September 2013; http://www.zef.de/auction_workshop.html

Loss or degradation of ecosystems means less supply of the goods and services we need to prosper. Yet, investment in ecosystems is costly. Therefore society needs to maximize the benefit from our limited funds. Conservation tenders enable the purchase of ecosystem services at a competitive but fair price. Compared to other approaches tenders may substantially reduce the total cost to purchase a certain quantity of services or buy much more ecosystem services with an identical budget. The lessons from this conference will support society in using conservation tenders to deliver more ecosystem services or desired services at a lower cost.

- *Plant-made vaccines as an alternative to antibiotics: countering antimicrobial resistance to veterinary bacterial diseases and ensuring human food safety*, London, Ontario, Canada, 23-25 Sept. 2013

The World Health Organization has identified the scourge of antibiotic resistance as one of the top three global health issues. Foodborne disease outbreaks are a recurring problem, the management of which represents a very significant cost to the agri-food industry and is passed on to the consumer in the cost of food. Livestock and poultry producers need alternatives to antibiotics that are effective and affordable, and efficacious and inexpensive vaccines for key bacterial pathogens should be key to reducing the use of antibiotics, and will result in safer food products. This workshop will specifically discuss the development of plant-based biotechnologies for producing vaccines for the agri-food industry, and chart a path forward for bringing plant-based vaccines to market.

- *Advancing Food Security and Sustainable Agriculture in the Circumpolar North, Girdwood, Alaska, USA, 29 September to 3 October 2013; <http://www.uaf.edu/cac/>*

Food security and food related health problems are worldwide issues in both urban and rural communities and in developed and developing countries. National governments have placed high priority on solutions. The self-sufficiency of northern communities has not been given the focus that is placed on the tropical and subtropical developing and underdeveloped nations. However, self-sufficiency of northern communities is equally as fragile and is endangered because of their remoteness, their climate, and the erosion of their traditional subsistence food resources forcing reliance on imported foods that have altered their eating patterns. This has exacerbated health problems related to a change in diet, and the non-agrarian nature of their cultural derivations. Supporting local northern communities also supports arctic sovereignty in these regions. This Summit will thus focus on these issues in a region that is often ignored in discussions regarding agriculture and food. Since issues and successful approaches are common between northern regions and developing countries, keynote speakers and experts from across these regions will share their experience and provide updates on recent food security initiatives.

- *Science into policy; improving uptake and adoption of research, Brisbane, Australia, 12-13 Nov.2013 <http://www.csiro.au/Organisation-Structure/Divisions/Ecosystem-Sciences/OECD-Conference.aspx>*

In the context of regulatory and policy decision making, decision makers are faced with demanding circumstances usually requiring decisions in an environment of uncertainty and risk. Often, the situation requiring a decision is sensitive and contested and in many cases involves events for which there is little directly relevant past experience to draw upon. Given this, science-based tools of various sorts offer valuable ways of exploring possible consequences and thus advancing the decision-making process, yet all too often they are not used. By exploring the reason behind limited adoption and identifying strategies that may be applied to improve adoption into decision making, the conference will provide a framework that will help to encourage researchers and end-users to connect better. This will foster a more clear understanding, appreciation and awareness of each others' needs. Thus decisions that are based on a strong foundation of science are likely to be more transparent, robust and defensible which will in turn improve the quality of the actions that stem from their enactment.

Fellowship research topics in 2013:

- Model-based analysis of agronomical strategies to increase the sustainability of dairy farms
- Recombinant hybrid molecules of highly immunogenic proteins from *Rhipicephalus microplus* as vaccines for the prevention of cattle tick infestations
- Evaluation of packaged salad biosafety by next generation phenotyping
- Assessment of Uncertainty in Greenhouse Gas Emission Inventories in Agriculture.
- Developing a new precision farming technology to promote efficiency, enhance animal welfare and reduce environmental impact in pig meat production
- The evolutionary mechanisms governing the emergence of highly pathogenic avian influenza viruses – a molecular epidemiology study
- Understanding Hydro-Ecological and Climate Impacts on Sustainability of Water Management Practices in Spain
- Evolution of the genes coding for defence mechanisms against pathogens in Cucurbitaceae
- Irrigation technology to the service of sustainable food production in developed and developing countries
- Greenhouse gas emissions in dryland agricultural soils: A simulation approach
- Stimulation of plant immune response against virus infection using beneficial microbes
- Cultivation of perennial herbaceous plant species for biomass production, biodiversity enhancement, and environmental quality in northern latitudes
- Understanding the interaction of engineered nanomaterials, natural organic matter and micropollutants - improvement of water quality
- Relating weed communities to agricultural factors using functional traits
- Advanced genomic resource for wheat improvement
- The Role of MAPK Signalling In Environmental Regulation of Plant Cell Cycle
- Induction of Systemic Resistance to Foliar Pathogens by Disease Suppressive Soils
- Understanding Food Web Interactions For Improving Weed Biological Control
- Utilisation of genomic information in selection schemes
- Endocrine and paracrine factors regulate remodelling of the oocyte cumulus matrix: Relationship between morphological structure and function.
- The risks of emerging xenobiotics and their mixture contamination in marine aquaculture and fish farm biota
- Study on the role of agricultural R&D for strengthening of agricultural resilience to climate and ecosystem change
- Development of Plant-based Saline Ion Transport in the Soil-Plant-Water Continuum at the Watershed Scale
- Effective prediction models of pest outbreaks by using extraordinary long-term pest censuses

- A representative biotype definition for Grape Phylloxera by linking genotypic variation with host-plant interaction under different soil conditions

Summary reports submitted by the individual research fellows in 2013 are posted on the CRP website www.oecd.org/agriculture/crp as they become available.

Note: The call for applications for the submission of applications for 2014 research fellowship awards and conference sponsorship is currently open until *10 September 2013*. All relevant information and application forms will be available on the CRP website, through the link: www.oecd.org/agriculture/crp.

Recent Publications:

- 📖 Desjardins Y. (Ed.) (2012), "Proceedings of the XXVIII International Horticultural Congress on Science and Horticulture for People: Proceedings of the International Symposium on Emerging Health Topics in Fruits and Vegetables, IHC 2010", *Acta Horticulturae* 939, ISHS, Leuven; <http://www.actahort.org/books/939/>.
- 📖 Ammann W.J., M. Colbert, M. Stiffler (Eds.) (2012), "GRF One Health Summit 2012: One Health - One Planet - One Future: Risks and Opportunities", *Extracts from the Proceedings, Global Risk Forum GRF Davos*; http://onehealth.grforum.org/pages_new.php/Outcomes-One-Health-Summit-2012/245/1/244/.
- 📖 Flavobacterium 2012; *CD of the proceedings of the 3rd International Conference on Members of the Genus Flavobacterium*, sponsored by the CRP in June 2012.
- 📖 Price M. (Ed.) (2012), "Meat Science Special Issue: 58th International Congress of Meat Science and Technology (58th ICoMST), 12-17 August 2012, Montreal, Canada"; *Volume 92, Issue 3, November 2012*, Elsevier, Oxford; <http://www.sciencedirect.com/science/journal/03091740/92/3>.
- 📖 Helmisaari H.-S. and E. Vanguelova (Eds.) (2013), *Proceedings of the Workshop W6.1 Forest bioenergy and soil sustainability at EUROSOIL Congress, 2nd to 6th July 2012, Bari, Italy*; www.oecd.org/agriculture/crp and www.helsinki.fi/forestsciences/eurosoil/index.html.
- 📖 Proceedings from AgroEnviron 2012, Wageningen, Netherlands, May 2012; <http://library.wur.nl/ojs/index.php/AE2012/issue/archive>.
- 📖 Proceedings from Harmonisation of International Quality Assurance Standards for Trichinella Testing in Pork, Rome, Italy, November 2011; <http://www.trichinellosis.org/Guidelines.html>.
- 📖 Mock HP., ZY. Wang, S. Komatsu (Eds.) (2012) *Frontiers in Agriculture Proteome Research: Contribution of Proteomics Technology in Agricultural Sciences*, NARO Institute of Crop Science, Tsukubu.
- 📖 Keestra S., G. Mol (Eds.) (2011), *Soil Science in a Changing World, Program and Abstract Book*, Wageningen UR, Wageningen; <http://www.wageningensoilmeeting.wur.nl/UK/>.
- 📖 Kazakopoulos L. and G. Balotis (Eds.) (2013), *Medicinal Crops (Plants & Mushrooms): Challenges and Prospects for Sustainable Development in Small-Scale Farming*, Institute of Agricultural Sciences, Athens.

Web site: www.oecd.org/agriculture/crp

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OECD BIOTECHNOLOGY AND THE WORLD WIDE WEB

OECD's web site includes much information on biotechnology and related topics. The web site allows individual users to tailor the OECD site to their needs. By selecting the themes that interest them, visitors can personalize their homepages at My OECD to present the news, events, and documentation related to their chosen themes. Links to more detailed web pages are given in related sections above.

Visitors can also choose to receive automatically future editions of Biotechnology Update through My OECD.

- OECD's portal: www.oecd.org
- OECD's work on green growth: www.oecd.org/greengrowth/
www.oecd.org/croissanceverte
- OECD's work on biosafety and food/feed safety for transgenic products, see BioTrack Online: www.oecd.org/biotrack
- OECD's work on biodiversity: www.oecd.org/env/biodiversity
- OECD's biotechnology portal: www.oecd.org/sti/biotechnology
- OECD's key biotechnology indicators: www.oecd.org/sti/biotechnology/indicators
- OECD's work on synthetic biology: www.oecd.org/sti/biotechnology/synbio
- OECD's work on bioenergy: www.oecd.org/tad/bioenergy
- IEA's work on renewable energy: <http://www.iea.org/topics/renewables/>
- OECD's work on agricultural innovation systems: www.oecd.org/agriculture/policies/innovation
- OECD's seed certification schemes (agriculture, forest): www.oecd.org/tad/seed; www.oecd.org/tad/forest
- OECD's Cooperative Research Programme on Biological Resources in Agriculture: www.oecd.org/agriculture/crp



COMING EVENTS FROM JUNE 2013

- 10 June 2013:** Task Force on Industrial Biotechnology, 22nd Session, OECD Paris (*contact: J. Philp, STI/STP*)
- 10-11 June 2013:** Global Green Growth Summit 2013, Korea: http://gggi.org/ai1ec_event/global-green-growth-summit-2013/?instance_id (*contact: N. Girouard, Green Growth*)
- 11-12 June 2013:** Working Party on Biotechnology, 32nd Session, OECD Paris (*contact: J. Allan, STI/STP*)
- 20-21 June 2013:** OECD Expert Consultation on "Unlocking Global Collaboration to Accelerate Innovation for Alzheimer's Disease and Dementia", Oxford, UK, in co-operation with the Global Coalition on Ageing and Oxford University (Harris College) (*contact: J. Allan, M-A Baucher, STI/STP*)
- 10 Sept. 2013:** Deadline for submitting applications for 2014 research fellowship awards and conference sponsorship to the TAD Cooperative Research Programme (*contact: J. Schofield, TAD-CRP*)
- 24-26 Sept. 2013:** OECD Forest Seed and Plant Scheme, Annual Meeting of National Authorities, OECD Paris (*contact: C. Gaspar, TAD/COD*)
- 21-22 Oct. 2013:** Global Green Growth Forum – 3GF, Copenhagen, Denmark, <http://3gf.dk/> (*contact: N. Girouard, Green Growth*)
- 4 Nov. 2013:** Task Force on Industrial Biotechnology, 23rd Session, OECD Paris (*contact: J. Philp, STI/STP*)
- 4-5 Nov. 2013:** Joint Working Party on Agriculture and the Environment (JWPAE), 36th Meeting, OECD Paris (*contact: K. Karousakis, ENV/CBD*)
- 5-6 Nov. 2013:** Working Party on Biotechnology, 33rd Session, OECD Paris (*contact: J. Allan, STI/STP*)
- 6-7 Nov. 2013:** OECD international expert workshop on Biodiversity Offsets and Biobanking, OECD Paris (*contact: K. Karousakis, ENV/CBD*)
- 7-8 Nov. 2013:** Working Party on Biodiversity, Water and Ecosystems (WPBWE), 5th Meeting, OECD Paris (*contact: K. Karousakis, ENV/CBD*)
- 5-6 Dec. 2013:** Green Growth and Sustainable Development Forum 2013: "Encouraging and leveraging private investment for green infrastructure and technologies, including through innovation policies" (*contact: N. Girouard, Green Growth*)
- 6-7 Feb. 2014:** Task Force for the Safety of Novel Foods & Feeds, 21st Meeting, OECD Paris (*contact: B. Dagallier, ENV/EHS*)
- 10 Feb. 2014:** Workshop on New Plant Breeding Techniques (*organised by the Working Group for the Harmonisation of Regulatory Oversight in Biotechnology*), OECD Paris (*contact: K. Suwabe, ENV/EHS*)
- 11-13 Feb. 2014:** Working Group for the Harmonisation of Regulatory Oversight in Biotechnology, 28th Meeting, OECD Paris (*contact: K. Suwabe, ENV/EHS*)
- 9-13 June 2014:** OECD Seed Schemes, Annual Meeting of National Authorities, Zagreb, Croatia (*contact: I. Matuschke, TAD/COD*)



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**ENDNOTE: A BRIEF GUIDE TO THE OECD**

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation with 34 member countries³. The mission of the OECD is to promote policies that will improve the economic and social well-being of people around the world. OECD brings together the governments of countries committed to democracy and the market economy to support economic growth, boost employment, raise living standards, maintain financial stability, assist other countries' economic development, and contribute to growth in world trade.

The Organisation provides a setting where governments compare policy experiences, seek answers to common problems, and identify better policies for better lives. An increasing number of non-member economies participate in a wide range of activities, including some of those related to biotechnology.

The Council of OECD is the highest decision-making body of the Organisation. Its members are the Ambassadors of the Member countries to OECD. It is chaired by OECD's Secretary-General. Once a year, it meets at the level of Ministers from member countries. The Council decides on the annual budget of Organisation as well as the content of the programme of work.

In addition to the Council, there are around 200 specialised Committees and other bodies (including Working Parties, Working Groups, and Task Forces), which undertake the Organisation's programme of work. The governments of the Member countries nominate the participants to all these groups.

³ OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission also takes part in the work of the OECD.

The list below shows the main OECD bodies that have activities related to biotechnology:

OECD COUNCIL

Green Growth Strategy

Innovation Strategy

Global Forum on Biotechnology

Committee for Scientific and Technological Policy (CSTP)

- Working Party on Biotechnology
- Task Force on Industrial Biotechnology
- Task Force on Biomedicine and Health Innovation

Committee for Agriculture (COAG)

- Working Party on Agricultural Policies and Markets (APM)
- Co-operative Research Programme
- Research Programme on Bioenergy (*Trade and Agriculture Directorate, in collaboration with the International Energy Agency*)
- Seed Certification Schemes (agriculture, forest)

Joint Working Party on Agriculture and the Environment (JWPAE)

Environment Policy Committee (EPOC)

- Working Group on Biodiversity, Water and Ecosystems (WPBWE)
- Working Party on Climate, Investment and Development (WPCID)

Chemicals Committee and Working Party on Chemicals, Pesticides and Biotechnology (Joint Meeting)

- Working Group for the Harmonisation of Regulatory Oversight in Biotechnology (WG-HROB)
- Task Force for the Safety of Novel Foods and Feeds