Internal Co-ordination Group for Biotechnology

BIOTECHNOLOGY UPDATE

December 2021 - ICGB Newsletter No. 40

OECD

Biotechnology Update

Internal Co-ordination Group for Biotechnology (ICGB)

No. 40 – December 2021

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

The contents of this 'Biotechnology Update' 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: ehscont@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).

Visit the OECD Biotechnology Update website to access the latest news and previous editions. You can also sign up to the OECD Biotechnology Update newsletter to receive future editions directly to your inbox.

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 innovation. In 1993, the Internal Co-ordination Group for Biotechnology (ICGB) was established to facilitate co-ordination among these sectors.

Bertrand Dagallier, Head of OECD's Biosafety and Novel Foods/Feeds Safety Programmes, is the Executive Secretary of the ICGB, and the editor of the ICGB Newsletter with the contribution of Akihiro Kagoshima.

Contacts: Bertrand Dagallier, Akihiro Kagoshima (ENV/EHS)

GREEN GROWTH AND SUSTAINABLE DEVELOPMENT

The 2021 OECD Green Growth and Sustainable Development (GGSD) Forum on "A green recovery: Rethinking the built environment and transport?" has been held in a hybrid format on 16-18 November 2021.

Under this overarching theme, the Forum addressed how to better design cities as well as mobility of people and goods for a greener and more resilient future. The Forum also focused on how different countries are making use of recovery measures to meet the global goal of achieving net-zero greenhouse gas emissions by mid-century and other environmental objectives.

Presentations and video recordings are available on the conference website.

The 2022 OECD Green Growth and Sustainable Development (GGSD) Forum on "The impact of COVID-19 on innovation for green growth" will be held in November 2022. The agenda and more information will be available on the Forum website in the next months.

Contacts: Kumi Kitamori, Enrico Botta (ENV/GGGR)

Website: https://www.oecd.org/greengrowth/ggsd-forum.htm

ONGOING OECD WORK ON FOOD SYSTEMS

Background

The term "food systems" refers to all the elements and activities that relate to the production, processing, distribution, preparation and consumption of food, and the effects of these activities. The emphasis on "food systems" highlights the importance of potential synergies and trade-offs across different policy domains which have often been treated in silos – e.g. public health and nutrition, the environment, poverty and rural development.

Food systems matter not only for food security and nutrition, and for the livelihoods of those involved in them, but also for environmental sustainability. The United Nations organised a UN Food Systems Summit

in September 2021; OECD published a major report Making Better Policies for Food Systems earlier this year.

Ongoing Food Systems work at the OECD

Following the publication of Making Better Policies for Food Systems, OECD work on food systems is currently focusing on understanding evidence gaps on food systems.

A new paper, Overcoming Evidence Gaps on Food Systems, sets out the challenges. Making better policies for food systems will require overcoming evidence gaps on the extent, characteristics and drivers of policy issues; on the effectiveness of different policy instruments and their synergies and trade-offs; on how a policy would affect stakeholders; and on citizens' policy preferences. There are different types of evidence gaps, with different implications. Evidence is incomplete on many important issues. In other cases, evidence exists, but is not detailed enough to be useful (for example, not segmented by socio-economic status, or not spatially explicit). Inconsistent methodologies may also prevent comparison of available evidence, and evidence may be fragmented across different public and private actors. The paper highlights that evidence on synergies and trade-offs and on the effectiveness of policy instruments is especially lacking.

At the same time, evidence will never be "complete". Gathering evidence is costly, and time-consuming. Policy makers and the research community thus need to adopt a pragmatic approach, focusing on where better evidence can make the biggest difference. Different techniques exist to prioritise needs, while new technologies and institutional innovations can help.

Ongoing work in the Trade and Agriculture Directorate on this topic is exploring evidence gaps using "deep dives" on three specific topics: food assistance; gender aspects; and environmental impacts along food supply chains. The goal here is to show the variety of different types of evidence gaps that may occur, as well as different solutions which can help overcome these evidence gaps. This work will be developed over the course of 2021-22.

Recent publications:

- OECD (2021), Making Better Policies for Food Systems, OECD Publishing, Paris https://doi.org/10.1787/ddfba4de-en.
- Deconinck, K., Giner, C., Jackson, L.A., and L. Toyama (2021), "Overcoming evidence gaps on food systems", OECD Food, Agriculture and Fisheries Papers, No. 163, OECD Publishing, Paris, https://doi.org/10.1787/44ba7574-en.

Contact: Koen Deconinck (TAD/ATM)

GLOBAL FORUM ON BIOTECHNOLOGY

The Global Forum on Biotechnology, established in 2010, is one of 15 Global Fora created by OECD Committees. Global Fora are not official OECD bodies (except one[1]), 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 (non-Member) Partners as Participants or Associates is limited.

The OECD Global Fora provide platforms for peer learning and policy dialogue on issues which require interaction with Partners world-wide. They can also promote multidisciplinary and horizontal approaches

[1] The Global Forum on Transparency and Exchange of Information for Tax Purposes is governed by different rules than the OECD's other Global Fora.

beyond the scope of any single Committee and foster partnerships with other intergovernmental organisations.

OECD Global Fora 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 contribute to create active networks of policy makers in Member and Partner economies, to build consensus on what are the most effective policies and to identify "next-generation" issues. The principal functions of Global Fora 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 1) the Committee for Scientific and Technological Policy, and 2) the Chemicals and Biotechnology Committee. For instance, the Global Forum on Biotechnology provides the adequate framework to support the participation of several delegates from non-Member countries in the plenary meetings and associated activities of the Working Party on the Harmonisation of Regulatory Oversight in Biotechnology, as well as the Working Party for the Safety of Novel Foods and Feeds.

Website: General information on the Global Fora: http://www.oecd.org/global-relations/globalforums/

Contact: Bertrand Dagallier (ENV/EHS)

HARMONISATION OF REGULATORY OVERSIGHT IN BIOTECHNOLOGY

The OECD's Working Party on the Harmonisation of Regulatory Oversight in Biotechnology (WP-HROB) deals with the environmental safety of genetically-engineered organisms (plants, animals, micro-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 WP-HROB participants are mainly officials from OECD countries responsible for the environmental risk/safety assessment of products derived from modern biotechnology. Observer delegations and invited experts collaborate actively, given the increasing use of biotech products and breeding activities worldwide. They include key partners (Brazil, P.R. China, India, Indonesia, South Africa), other interested countries (e.g. Argentina, Kenya, Paraguay, Philippines, Russian Federation, Thailand, Uruguay, Viet Nam); Business at OECD (BIAC); FAO; UNEP; the Convention on Biological Diversity Secretariat; the African Biosafety Network of Expertise (AUDA NEPAD-ABNE) and the Agriculture and Food Systems Institute. Participation from non-OECD countries is supported by the Global Forum on Biotechnology. The 35th meeting of the WP-HROB, held online in March 2021, had a record number of participants, with nearly 150 attendees from 43 delegations.

The publication of Consensus/Guidance Documents remains 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. The 60 Consensus Documents issued to date address a range of subjects including the biology of crops , trees and micro-organisms, as well as selected traits that have been introduced in plants. Two biology documents deal with animal species, Atlantic salmon and mosquito Aedes aegypti where engineered strains are being used to fight against dengue fever and other tropical diseases spread. Other key issues in the context of environmental risk assessment are also covered. For the first time this year, the summary of recent developments in delegations on biosafety

issues, prepared for the 'Tour-de-table' at the 35th WP-HROB meeting, was published in May 2021. All these documents are available through the OECD BioTrack website (www.oecd.org/science/biotrack).

Works under development are as follows:

- Crop and animal species: revision of the rice (publication expected in December 2021), and wheat biology documents; biology of mosquito Anopheles gambiae that is the main vector of malaria;
- Micro-organisms: biology and use of phototrophic micro-algae for production purposes;
- Biosafety assessment key issues: Environmental Considerations for the release of transgenic plants;
- Joint WP-HROB/WP-SNFF projects contemplated for future work: reviewing the OECD Council Recommendation on the safety of recombinant DNA organisms; enhanced information exchange on New Breeding Techniques; moving towards "safe-by-design" in the context of modern biotechnology.

Upcoming event:

- 36th Meeting of the Working Party on the Harmonisation of Regulatory Oversight in Biotechnology, 30 March–1 April 2022

Recent publications:

- Developments in Delegations on Biosafety Issues, April 2020 – March 2021 (2021)
- Consensus Document on the Biology of Safflower (Carthamus tinctorius) (2020)
- *Updated "Points to Consider for Consensus Documents on* Biotechnology of Cultivated Plants*"* (2020)

Website: BioTrack Online www.oecd.org/science/biotrack

Contacts: Akihiro Kagoshima, Bertrand Dagallier, Natsuo Komoto (ENV/EHS)

SAFETY OF NOVEL FOODS AND FEEDS

The OECD Working Party for the Safety of Novel Foods and Feeds (WP-SNFF) 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 WP-SNFF activities. The 28th meeting of the WP-SNFF was held in March 2021 online, with a large participation from 40 delegations.

Consensus documents

The main output is the set of consensus documents on compositional considerations for new varieties of specific crops. These documents compile a common base of scientific information on the major components of the plants and their derived products: key nutrients; toxicants; anti-nutrients; and other plant metabolites where relevant. The document on the composition of potato, a revision of the 2002 publication, was issued in December 2020; it constitutes a key achievement of broad interest as potato is the fourth global staple crop and its tubers are used worldwide for foods, feeds and industrial uses. Other publications deal with general aspects to facilitate harmonisation in safety assessment. These documents constitute practical tools for regulators and risk assessors dealing with new transgenic varieties, with respect to human food and animal feed safety. To date, 28 Consensus Documents have been published on major crops and mushrooms, the animal feedstuffs, as well as the molecular characterisation of plants derived from modern

biotechnology developed in common with the WP-HROB. They are available through the OECD BioTrack website (www.oecd.org/biotrack).

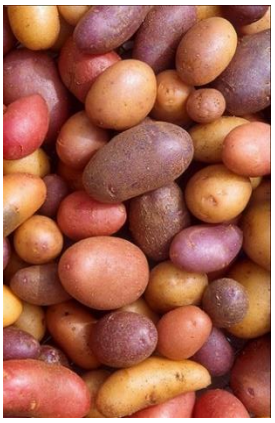
On-going projects focus on updating the maize composition document, and developing a guidance document on best practices for collaborative work on the safety of novel foods and feeds (both publications expected in 2022). Joint WP-HROB/WP-SNFF projects are also contemplated for future work: reviewing the OECD Council Recommendation on the safety of recombinant DNA organisms; enhanced information exchange on New Breeding Techniques; moving towards "safe-by-design" in the context of modern biotechnology.

Outreach and Engagement of Non Member Economies

Officials from OECD countries and delegates from the European Food Safety Authority (EFSA), Business at OECD (BIAC), observer organisations such as FAO, UNEP and AFSI, participate actively in the novel food and feed safety programme. In addition, the WP-SNFF 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. Brazil, South Africa and Thailand, for example, were actively involved in the drafting of consensus documents on compositional considerations for cowpea, cassava, papaya as well as other tropical crops. The WP-SNFF benefits also from the expertise from Argentina, India, Kenya, Paraguay, Philippines, Russian Federation, Uruguay, Viet Nam and the African Biosafety Network of Expertise (AUDA NEPAD-ABNE). Participation from non-OECD countries is supported by the Global Forum on Biotechnology.

Upcoming events:

- 29th Meeting of the Working Party for the Safety of Novel Foods & Feeds, 28-30 March 2022



Recent publications:

- 🕮 Development in OECD Delegations on the Safety Assessment of Novel Foods and Feeds, April 2020 – March 2021 (2021)
- 🕮 Revised Consensus Document on Compositional Considerations for New Varieties of Potato (Solanum tuberosum) (2020)

Website: BioTrack Online www.oecd.org/biotrack

Contacts: Natsuo Komoto, Bertrand Dagallier, Akihiro Kagoshima (ENV/EHS)

BIOTRACK ONLINE

The BioTrack Online information system is a mechanism by which the Working Party on the Harmonisation of Regulatory Oversight in Biotechnology and the Working Party 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 on new or updated entries provided by Australia, Japan, Philippines and the European Union was added to the Product Database in the second half of 2021. Currently, the database includes 388 products of transgenic crops, trees and flowers, from a total of 24 plant species (eggplant, moth orchid and wheat are new species from this year), these products being approved in one or several of 17 countries and the European Union. Drought-tolerant trait is reported to date in a total of 20 varieties of maize, soybean and wheat.

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

The co-operation continues between the OECD's Product Database, the CBD Biosafety Clearing-House and the FAO GM Food Platform, for interoperability between these web-based systems and facilitating the exchange of information on safety assessment of transgenic organisms and foods. This activity 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.

Website: BioTrack Online www.oecd.org/biotrack

Product Database https://biotrackproductdatabase.oecd.org/

Contacts: Akihiro Kagoshima, Bertrand Dagallier (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, land use, and ecosystems (BLUE). It includes areas such as biodiversity valuation, the use of economic instruments and other policy measures, biodiversity mainstreaming and finance. This programme also supports the Convention on Biological Diversity (CBD). The work is conducted under the oversight of the OECD Working Party on Biodiversity, Water and Ecosystems (WPBWE), a subsidiary body of the Environment Policy Committee (EPOC).

Biodiversity, including forests, wetlands and marine ecosystems, is fundamental to sustaining life. Biodiversity provides critical ecosystem services such as food provisioning, water purification, nutrient cycling, and climate regulation, all of which are essential to support human well-being and economic growth. Despite the significant economic, social and cultural benefits provided by biodiversity and ecosystem services, global biodiversity is declining.

The OECD released Biodiversity, Natural Capital and the Economy: A Policy Guide for Finance, Economic and Environment Ministries, prepared at the request of the UK G7 Presidency in 2021. The report provides the latest findings and policy guidance for G7 and other countries in four key areas: measuring and mainstreaming biodiversity; aligning budgetary and fiscal policy with biodiversity; embedding biodiversity in the financial sector; and improving biodiversity outcomes linked to international trade.

The brochure on Tracking Economic Instruments and Finance for Biodiversity - 2021, updated in September 2021, highlights trends in the use of biodiversity-relevant economic instruments (such as taxes, fees and charges, tradable permits, and environmentally-motivated subsidies) and the finance they mobilise, based on available data in the OECD Policy Instruments for the Environment (PINE) database. These data have been used to monitor progress towards CBD Aichi Target 3 and Sustainable Development Goal (SDG)

Target 15.a.1 on biodiversity finance. They are also relevant for Target 18 in the draft post-2020 Global Biodiversity Framework.

The policy paper Enhancing the effectiveness of sub-national biodiversity policy: Practices in France and Scotland, United Kingdom, was published and presented on Nature Day at UNFCCC COP26. Drawing on policy practices from Scotland (UK), France and other signatories to the Edinburgh Declaration, this paper provides an overview and analysis of sub-national biodiversity strategies and plans; mechanisms to ensure policy coherence and co-ordination; and policy instruments that subnational governments can leverage to deliver on biodiversity outcomes.

In advance of the United Nations Summit on Biodiversity in September 2020, OECD released a policy brief on Biodiversity and the economic response to COVID-19: Ensuring a green and resilient recovery. The brief outlines how biodiversity loss is a key driver of emerging infectious diseases and poses a variety of other growing risks to society, businesses and the global economy. It then examines how governments are factoring biodiversity into their stimulus measures and recovery plans in practice. The brief concludes with policy recommendations on how governments can better integrate biodiversity into their COVID-19 stimulus measures and broader recovery efforts.

Another report published in September 2020 is on A Sustainable Ocean for All: Harnessing the Benefits for Developing Countries. It provides policy makers in developing countries, as well as their development co-operation partners, with analysis on (i) the latest trends in selected ocean-based industries; (ii) policy instruments, including economic incentives, to promote ocean sustainability in various contexts; (iii) the first review of development finance and development co-operation practices in support of more sustainable ocean economies, including a discussion of how development co-operation can help re-orient private finance towards sustainability.

At the request of the French G7 Presidency in 2019, a report on Biodiversity: Finance and the Economic and Business Case for Action was released in May. A follow-up report, with a focus on finance, A Comprehensive Overview of Global Biodiversity Finance was released in April 2020.

The publication Towards Sustainable Land Use: Aligning Biodiversity. Climate and Food Policies, released in January 2020, examines on-going challenges for aligning land-use policy with climate, biodiversity and food objectives, and the opportunities to enhance the sustainability of land-use systems. It looks at six countries – Brazil, France, Indonesia, Ireland, Mexico and New Zealand – with relatively large agricultural and forestry sectors and associated greenhouse gas emissions, many of which host globally important biodiversity. Drawing on these countries' national strategies and plans, institutional co-ordination and policy instruments, the report provides good practice insights on how to align land use decision-making processes and to achieve stronger coherence between land use, climate, ecosystems and food objectives.

Managing the biodiversity impacts of fertiliser and pesticide use: Overview and insights from trends and policies across selected OECD countries reviews the impacts and costs of pesticide and fertiliser pollution as well as the policy responses to counter these. The paper begins with an overview of the main biodiversity and health impacts of excess pesticide and fertiliser. It then provides an overview of the trends in pesticide sales and use, and soil nutrient balances in OECD countries, before reviewing policy instruments available to promote more sustainable fertiliser and pesticide use. Case studies of specific policy responses are presented for Denmark, France, Japan and the United States. Based on the literature review and case studies, the paper concludes with policy insights and recommendations.

Other on-going OECD work on biodiversity is focussing on developing guidance to identify and assess subsidies harmful to biodiversity at the national level; on biodiversity and green budgeting; and on mainstreaming biodiversity in the infrastructure sector.

Recent publications and working papers:

- OECD (2021), Tracking economic instruments and finance for biodiversity - 2021
- OECD (2021), Enhancing the effectiveness of sub-national biodiversity policy: Practices in France and Scotland, United Kingdom
- OECD (2021), Biodiversity, natural capital and the economy: A policy guide for finance, economic and environment ministers.

- OECD (2020), Biodiversity and the economic response to COVID 19: ensuring a green and resilient recovery (policy brief).
- OECD (2020), Sustainable Ocean for All: Harnessing the Benefits of Sustainable Ocean Economies for Developing Countries.
- OECD (2020), A Comprehensive Overview of Global Biodiversity Finance.
- OECD (2020), Tracking Economic Instruments and Finance for Biodiversity 2020 (brochure).
- OECD (2020), Towards Sustainable Land Use: Aligning biodiversity, climate and food policies.
- OECD (2020), Biodiversity and Agriculture: Pesticide and fertiliser trends and policies across selected OECD countries.

Upcoming publications and working papers:

Guidance to identify and assess subsidies harmful to biodiversity at national level.

Website: www.oecd.org/environment/resources/biodiversity/

Contacts: Katia Karousakis, Edward Perry (ENV/ETR)

REGULATION OF EXTERNALLY APPLIED dsRNA-BASED PRODUCTS FOR THE MANAGEMENT OF PESTS

The OECD Conference on Regulation of Externally Applied dsRNA-based Products for the Management of Pests was held at the OECD Headquarters in April 2019. The event benefitted from financial support from the OECD Co-operative Research Programme: Biological Resource Management for Sustainable Agricultural Systems (CRP).

The Expert Group on RNAi-based pesticides (EGRNAi) – a sub-body of the OECD Working Party on Pesticides - organised the conference and coordinated the preparation of the conference with the Federal Office of Consumer Protection and Food Safety (BVL) in Germany, the European Food Safety Authority, Health Canada and the US Environmental Protection Agency.

The full proceedings of the conference have been published online at the Frontiers Research Topic RNAi Based Pesticides. This special issue contains papers prepared after the conference by the speakers, and the conference report (2020) that summarises input from presenters and participants during the panel discussions at each session. Key elements from these discussions have already been incorporated into the OECD Working Document on Considerations for the Environmental Risk Assessment of the Application of Sprayed or Externally Applied ds-RNA-Based Pesticides, Series on Pesticides No.104, that was released in September 2020. It will facilitate regulators in evaluating externally applied dsRNA-based products for potential environmental risks.

The first draft of the second working document on human health related challenges from exposure to topical applied dsRNA-based pesticides, that will include the lessons learned from the application of this technology in the field of pharmaceuticals, is currently under revision based on the comments received from the EGRNAi earlier in 2021.

Recent publications and working papers:

- OECD (2020), Considerations for the Environmental Risk Assessment of the Application of Sprayed or Externally Applied ds-RNA-Based Pesticides.
- Mendelsohn et al. (2020), Summary of Discussions From the 2019 OECD Conference on RNAi Based Pesticides.
- RNAi Pesticides (several authors) (2019-2021), full proceedings of the 2019 OECD conference on RNAi based pesticides.

Website: http://www.oecd.org/chemicalsafety/pesticides-biocides/conference-on-rnai-based-pesticides.htm

Contacts: Magda Sachana, Patience Browne (ENV/EHS)

OECD CONFERENCE INNOVATING MICROBIAL PESTICIDE TESTING

The Expert Group on Biopesticides (EGBP) – a sub-body of the OECD Working Party on Pesticides – is organising an OECD Conference on Innovating Microbial Pesticide Testing to be held at the OECD Headquarters on 10-12 May 2022. The OECD Secretariat and the US Environmental Protection Agency are coordinating preparations that will include experts from a number of OECD member countries who will contribute a background document and the presentations of the conference.

This conference will focus on critical innovations in hazard testing for microbial pesticides. Microbial pesticides are microorganisms (e.g., bacteria, fungi, viruses) that are used to control a wide range of agricultural pests, including plant disease-causing microorganisms, fungi, insects, and weeds. These pesticides are important components of a sustainable agriculture strategy because they generally have a lower risk profile and are more selective for targeted pests compared to conventional chemical pesticides. Microbial pesticide hazard testing is challenging, as current test guidelines were developed for chemical pesticides and do not take into account microbial pesticides' unique properties. Using the current test guidelines for microbial pestcides can produce study results that are inconsistent, difficult to interpret. The absence of available guidelines that are specific for microbial pesticides may result in higher testing costs to developers and regulators and challenges for registering microbial pesticides, which impedes bringing innovation to agriculture and the bioeconomy, and ultimately reduces availability of these lower-risk alternatives in the marketplace.

The goal of the conference is to develop, agree upon, and begin to implement a workplan to improve current test guidelines for microbial pesticides. This includes improving test guidelines for measuring effects of microbial pesticides in nontarget organism (e.g., birds, fish, bees) and establishing a framework for future mammalian test guidelines using new approch methods for evaluating microbial pesticide hazards.

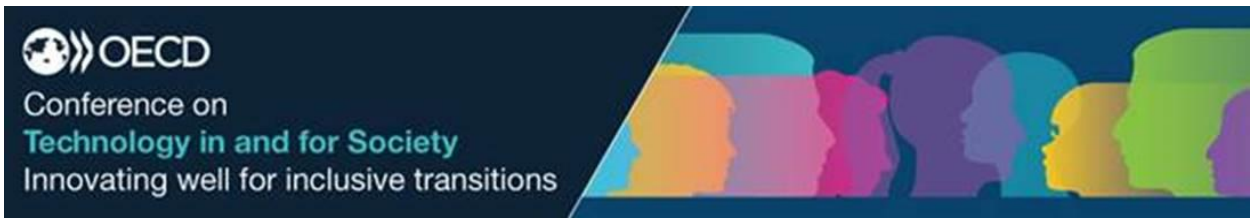
Other relevant EGBP activities: The EGBP is currently developing an OECD Guidance Document on Baculoviruses as Plant Protection Products. This will complement the Consensus Document on Information Used in the Assessment of Environmental Applications Involving Baculoviruses [ENV/JM/MONO(2002)1] published by the Working Party on the Harmonisation of Regulatory Oversight in Biotechnology in 2002. Only a few additional, publically available safety studies have been carried out during the last 20 years,

but the new Guidance Document will extend the 2002 Consensus Document by referring to new knowledge on the biology of baculoviruses, as well as the describing experiences using baculovirus as a plant protection agent.

Website: https://www.oecd.org/chemicalsafety/pesticides-biocides/biological-pesticides.htm. A dedicated webpage for the conference is under development.

Contacts: Magda Sachana, Patience Browne (ENV/EHS)

REGISTER NOW TO HIGH-LEVEL OECD CONFERENCE: TECHNOLOGY IN AND FOR SOCIETY ON 6-7 DECEMBER 2021



The OECD conference "Technology in and for Society: Innovating well for inclusive transitions" (6-7 December 2021, online). The multi-stakeholder conference aims to explore values, design principles, and a possible practical agenda for leveraging good governance and responsible innovation for critical sociotechnical transformations. It will explore how we can innovate both more and well, i.e. within inclusive processes, with values at the centre, and with lasting positive impact.

For more information visit the website to register and view the detailed agenda.

In the below agenda overview, we would like to draw your particular attention to **Panel 2b. "Realising** net **carbon neutrality: the role of carbon management technologies" Dec 7, 2021 | 12:00 PM** - 1:15 PM

Speakers

- Mr. Michael Carus, Founder and managing director at NOVA-Institute, Germany
- Mr. David Keith, Professor of Applied Physics at Harvard University, United States
- Ms. Emily Grubert, Deputy Assistant Secretary for Carbon Management, US Department of Energy, Unites States
- Ms. Monica Gattinger, Professor, University of Ottawa, Canada
- Mr. Paolo Frankl, Head of the Renewable Energy Section, International Energy Agency (IEA)

Questions

- What knowledge is necessary to better guide national and international policy communities as they manage emerging technology portfolios for carbon management?
- What can more holistic approaches to carbon management offer for developing technology pathways to net carbon neutrality?
- What policies could ensure that one technology is not a barrier for implementation of another?

Agenda overview

DAY 1: Monday 6 December 2021 (time in CET)

11:30 – 11:50	Welcome and scene-setting by Mathias Cormann, OECD Secretary General
11:50 – 13:30	High-level roundtable: Realising inclusive technological transitions
13:40 – 14:10	Keynote by Sheila Jasanoff, Harvard University
14:20 – 15:35	Panel 1: Building inclusivity upstream: engaging diverse actors in the development of emerging technology
15:45 – 16:20	Fireside conversation: Values-driven development of emerging technologies in an international context

DAY 2: Tuesday 7 December 2021 (time in CET)

11:45 – 11:55	Introduction to Day 2 and Panel 2 (parallel)
12:00 – 13:15	2a) Harnessing responsible neurotechnology for brain health 2b) Realising net carbon neutrality: the role of carbon management technologies

	2c) Innovating global health: Collaborative action where markets fail
13:25 – 13:40	Panel 3. Setting goals and agendas through foresight and participatory processes
15:10 – 16:20	Panel 4. Tools of upstream technology governance: soft law, standards, and ethics-by-design
16:25 – 16:50	Concluding remarks and next steps

Contact: David Winickoff (STI/STP)

COLLABORATIVE PLATFORMS FOR PANDEMIC PREPAREDNESS AND HEALTH RESILIENCE – BNCT PROJECT FOR 2021-22

The BNCT project “Collaborative platforms for pandemic preparedness and health resilience” aims to analyse experiences from cross-sector collaboration and the wider innovation ecosystems of common pool resources, such as pandemic vaccines and antibiotics. Biomedical research and pharmaceutical innovation has been a key driver of longevity and health. However, the Covid-19 pandemic has laid bare the fragility of health technology supply in areas that are critical for public health and well-being. There are various reasons for supply shortages or innovation gaps in common pool resources, such as pandemic vaccines, diagnostics, and novel antimicrobials. Indeed, market failure of novel antibiotics has been a priority at the UK G7 presidency 2021.

Innovation of some health technologies that support pandemic preparedness and resilience do not promise a return of investment adequate to attract investment. As examples, novel antibiotics, and some diagnostics, are prone to market failure. New governance approaches and business models could bridge research, economic, and societal priorities to achieve key societal missions for pandemic preparedness and health resilience.

A panel “Innovating global health: Collaborative action where markets fail” at the BNCT-STP Conference “Technology in and for Society” (6 - 7 December 2021) will discuss collaborative partnerships and novel business models between governments, public research institutes, industry, funders and philanthropy can help overcome economic barriers to sustainable health innovation where traditional markets do not deliver. Panellists are:

- Dr Jayasree K. Iyer, Executive Director, Access to Medicine Foundation, Amsterdam, The Netherlands
- Dr Kevin Outterson, Professor of Law & N. Neal Pike Scholar in Health and Disability Law - Boston University, Executive Director, CARB-X, Boston, USA
- Dr Hani Kim, Executive Director, The Research Investment for Global Health Technology Fund (The RIGHT Fund), Korea
- Dr Pierre Meulien, Executive Director, Innovative Medicines Initiative (IMI), Brussels, Belgium
- Dr Julie Louise Gerberding , Executive Vice President and Chief Patient Officer, MSD, USA

Preliminary findings of the project include:

- New kinds of collaboration are needed in order to address unmet needs at the interfaces of health technologies and society. Integrated drug discovery and development platforms offer a collaborative approach to manage significant upfront investments, risks of drug development failure, and to speed-up market access.
- Innovative business models will be required to organize and facilitate multi-sector collaboration and value exchanges. Activities should focus on novel structural funding, stewardship, sustainability, and risk-sharing instruments dedicated to pandemic preparedness and other areas where markets and return of investment are limited.

- Blended financial instruments offer opportunities for more sustainable private sector innovation where markets fail. While much blended finance funds are geared towards SDGs, there are fewer funds focused on R&D projects for commercialising early stage innovations.
- Embedding innovation within population-based frameworks – such as Convergent Innovation, Health in All Policies, One Health, Health System Resilience, Responsible Innovation – will help achieve synergies across global health systems.
- There is a lack of understanding of how to implement approaches to Technology Assessment (TA) into business models for health innovation and for exploring the economic, social and environmental performance of novel health technologies.
- As a response to pressing global health challenges innovators, public funders, private investors and health care providers are increasingly expected to monitor, asses and shape their social impact. Business models that are aimed at delivering common pool resources should implement a 'measuring culture' along the value chain of health technology innovation.
- Long-term transformational change will require government policy and corporate changes aimed at building an innovation ecosystem that bridges market and societal needs presented by health priorities, such as pandemics, population ageing, inequality, undernutrition, obesity, and environmental threats.

Contact: Hermann Garden (STI/STP)

BNCT'S WORK ON THE IMPLEMENTATION OF THE OECD RECOMMENDATION ON RESPONSIBLE INNOVATION IN NEUROTECHNOLOGY

The BNCT Working Party has been engaging in implementation efforts of the Recommendation on Responsible Innovation in Neurotechnology since its adoption by the OECD Council in December 2019. The Recommendation is the first international instrument of its kind in the Neurotechnology field and marks BNCT's expertise in issues of responsible innovation of emerging technologies [further information and links: https://oe.cd/NeurotechnologyRecommendation].

Implementation efforts so far have consisted of the following activities:

(1) dissemination at external events, and conferences;

(2) publications: 'New frontiers of the mind: enabling responsible innovation in neurotechnology' (December 2019, the OECD Forum Network); 'Brain-computer interfaces and the future of neurotechnology governance' (September 2020, OECD innovation blog); Chapter "The OECD approach to responsible innovation" (p.79-84) in edited book Convergence Mental Health: A Transdisciplinary Approach to Innovation (January 2021); and

(3) organisation of capacity building workshops: in September 2020 (the "Seoul Event") and on 19-20 May 2021 (the "Zurich Event"): "Neurotechnology in and for society: deliberation, stewardship and trust". 140 participants from 25 countries and 110 different institutions attended the 2-day virtual workshop. Hosted by the Swiss delegation, it focused on gathering good practices and experiences related to Principles 5 and 8 of the Recommendation that focus on enabling societal deliberation and cultures of stewardship and trust between the public and private sector, respectively. Experts from the public and private sector, academia, as well as non-governmental, non-profit and patient organisations shared experiences and discussed issues that are vital in the notion of "Neurotechnology in and for society". The event page includes an executive summary, 3 short highlight videos, the agenda, a flyer with speaker bios and links to the full recording as well as other post-event materials.

(4) jointly organised the roundtable "Neurotechnologies and Human Rights Framework: Do We Need New Rights?" with the Council of Europe. The virtual event on 9 November 2021 had over 250 participants. It assessed the existing human rights framework and identified possible avenues for actions to contribute to responsible innovation in neurotechnology. Video recordings of all sessions, the agenda, speaker profiles and other materials are available on the event page.

Contact: Laura Kreiling (STI/STP)

COLLABORATIVE PLATFORMS FOR CONVERGING TECHNOLOGY - BNCT

In May 2021, the Working Party on Biotechnology, Nanotechnology and Converging Technologies (BNCT) presented the final outputs of its project on "Collaborative Platforms for Converging Technology" (2019-20). Collaborative platforms are organisational arrangements around shared resources – material, digital or both – for technological development and diffusion. These platforms work across the private and public sector to manage, coordinate, and catalyse innovation. Many governments, along with partners in industry and civil society are developing experimental forms of these collaborative platforms to provide better linkages between research and innovation, and to promote the development and use of emerging technology.

The project selected key fields of emerging technology – genomics, engineering biology and advanced materials -- as sites of inquiry, collecting a total of 33 case studies. Collaborative platforms in these three technology areas offer both technology specific and more generalised insights about policies for building and managing these resources critical for the development and transfer of emerging technology.

Key outputs from the project are three policy paper publications:

- Synthesis report: "Collaborative platforms for emerging technology: Creating convergence spaces" (2021) – finds that collaborative platforms are most effective when they act as "convergence spaces" for the fusion of diverse disciplines, actors and technology; – shows how governance mechanisms shape platform operations and act as policy levers for ordering what amounts to a common pool resource.
- Advanced materials report: "Collaborative platforms for innovation in advanced materials" (2020) – characterises governance mechanisms of collaborative platforms for advanced materials such as terms of funding, access, and IP policy; – explores how they can create different kinds of value. Technology convergence, the engagement of society and digitalisation are identified as key trends.
- Genomics report: "Building and sustaining collaborative platforms in genomics and biobanks for health innovation" (2021) – explores the complex technical, legal and business challenges arising from genomics and biobanks; – brings together ideas and best practices from major national and international platforms, and from a diverse range of experts.

Contact: David Winickoff (STI/STP)

BIOTECHNOLOGY STATISTICS

The OECD Key Biotech Indicators (KBI) and the OECD Key Nanotech Indicators (KNI) were updated in October 2021. Time series are presented for a select number of indicators. Visit the websites to see the latest interactive visualisations!

The KBI are available at: oe.cd/kbi and the KNI data are available at: oe.cd/kni.

Contact: Brigitte van Beuzekom (STI/STP)

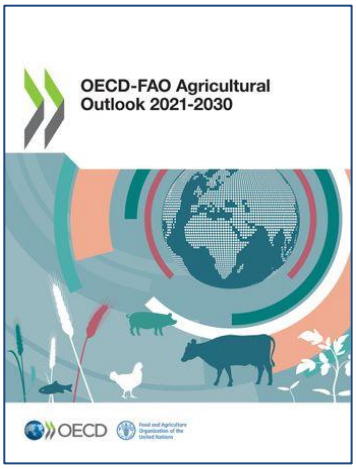
BIOENERGY AND BIOFUELS AT TRADE AND AGRICULTURE DIRECTORATE

The subject of bioenergy touches various areas, in particular, scientific developments, environmental effects, energy balances and agricultural market economics. The Trade and Agriculture Directorate (TAD) work on bioenergy focuses on a comprehensive compilation of data and information, the categorisation of the variety of support policies and the quantitative analysis of bioenergy markets and policy measures.

An economic assessment of biofuel support policies, published in 2008, 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. 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 presented the technology and costs associated with the bioheat, biopower production as well as second generation biofuels.

An OECD study published in 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 2021 Agricultural Outlook (projecting on the 2021-2030 period) is available at http://www.agri-outlook.org/, see 'Biofuels' chapter (OECD/FAO, 2021).



TAD has created a detailed database of policies in the fertiliser and biofuel sectors of OECD countries and several Emerging Economies available at http://www.oecd.org/tad/agricultural-policies/support-policies-fertilisers-biofuels.htm. An analysis of these policies and their implications for agricultural markets and incomes has been published within the Food, Agriculture and Fisheries Paper series (von Lampe et al., 2014). A previous Trade and Environment Working Paper has focused on domestic incentive measures for renewable energy with possible trade implications (Bahar, Egeland and Steenblick, 2013).

TAD participates in the Agricultural Market Information System (AMIS) project (www.amis-outlook.org). One of TAD's contributions to AMIS is to report each month on newly implemented biofuel policies in the AMIS countries in the Market Monitor Report. In addition, TAD has developed a large policy database including biofuel policies (http://statistics.amis-outlook.org/policy/).

The OECD and the IEA currently collaborate in an analysis of the costs and prospects associated to current and emerging biofuel supply pathways.

Recent Publication:

- 🕮 OECD/FAO (2021), OECD-FAO Agricultural Outlook 2021-2030 – "Biofuels" chapter, full document available at: http://www.agri-outlook.org/.

Website: http://www.oecd.org/tad/agricultural-trade/bioenergy.htm
AMIS Market Monitor Report: http://www.amis-outlook.org/amis-monitoring/monthly-report/en/
AMIS biofuel policies database: http://statistics.amis-outlook.org/policy/

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BIOENERGY AT THE IEA

The activities of the International Energy Agency (IEA) cover bioenergy across the electricity, heat and transport sectors.

On July 19th the IEA, India's Ministry of New and Renewable Energy and the Council on Energy Environment and Water hosted the India Bioenergy Workshop. The workshop hosted nine international speakers and eight Indian speakers who shared their biogas and municipal-solid-waste to energy experiences. Over 400 people joined the webinar, half from India and half from outside India. The workshop highlighted India's significant biogas and MSW-to energy opportunity as well as the challenges facing India including feedstock aggregation, policy design, measurement and financing. Across the international examples, framing, ownership models, well designed policies and institutional coordination have all been critical to expanding biogas and MSW-to-energy.

In October 2021, the IEA released the 2021 edition of its World Energy Outlook. The report finds that a net zero pathway will require a rapid scale up of low-emissions fuels like bioenergy. Bioenergy plays an important role in sectors where direct electrification is most challenging. Biofuel demand triples in the net zero scenario by 2030 from 2020 levels while modern, solid bioenergy increase by 70%. Biogases provide 400 million with access to clean cooking by 2030.

Figure 1: The rising share of low emissions fuels in the energy mix, WEO 2021

In advance of COP 26 the IEA released its updated Tracking Clean Energy Progress report that assesses 46 critical energy technologies and provides recommendations on how they can get "on track" with the IEAs net zero scenario. The technology assessment includes several biofuel pathways including those for power, heat, aviation and road transportation.

Look for Renewables 2021 on December 1st, 2021. Renewables 2021 is the IEA's primary analysis on the sector, based on current policies and market developments. It forecasts the deployment of renewable energy technologies in electricity, transport and heat to 2026 while also exploring key challenges to the industry and identifying barriers to faster growth.

Recent publications:

- IEA (2021), World Energy Outlook 2021 https://www.iea.org/reports/world-energy-outlook-2021
- IEA (2021), Tracking Clean Energy Progress https://www.iea.org/topics/tracking-clean-energy-progress
- IEA (2021), India Bioenergy Workshop https://www.iea.org/events/india-bioenergy-workshop-current-status-in-india-and-international-experience-in-deploying-biogas-and-msw-to-energy

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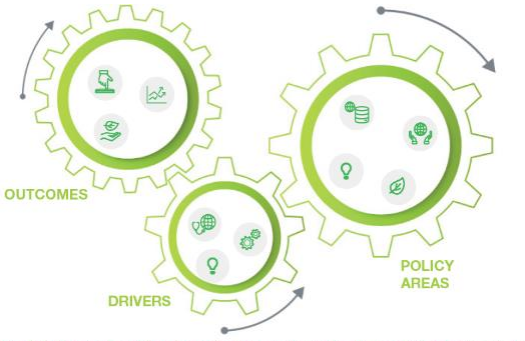
POLICIES FOR AGRICULTURAL INNOVATION

The OECD Agro-food Productivity Sustainability Resilience policy framework

Innovation in agriculture is a key driver to improve the productivity and environmental sustainability of the sector. Innovative technologies and practices allow the food systems to produce more food for a growing world population, using less resources and reducing the pressures on the environment. Furthermore, innovation can make food systems more resilient to systemic shocks exacerbated by climate change, including sudden outbreaks like COVID-19 pandemic. The Agro-food Productivity-Sustainability-Resilience policy framework responds to a demand from the G20 in 2012 and is currently a ready-to-use instrument to analyse the performance of agricultural policies from a holistic perspective and their contribution to enhance innovative outcomes.



The OECD Agro-Food Productivity-Sustainability-Resilience Policy Framework

Agriculture Innovation Systems

Recognizing the potential role of biotechnologies in increasing productivity and facilitating adaptation to climate change, the OECD Trade and Agriculture Directorate (TAD) has analysed agricultural innovation systems and the role of policies in fostering innovation. In 2013, an OECD report on the role of the government in fostering innovation in the agri-food sector already defined the basis to analyse a wide range of policies that affect agricultural innovation systems. Applied first to three pilot country reviews published in 2015 (Australia, Brazil and Canada), the framework was used in a number of country reviews: the Netherlands (2015), Turkey and the United States (2016), P.R. China, Estonia, Korea and Sweden (2018), and Japan and Latvia (2019). The review of Viet Nam is expected to be completed in 2021. Furthermore, the country studies of Argentina (2019) and Norway (2021) have also a focus on agriculture innovation applying the revised framework.

The main findings and policy recommendations from the country reviews achieved since 2015 were published in 2019 (OECD, 2019). A booklet containing an overview of the main findings and a policy brief were made available at an OECD seminar organised on 11 May 2019 before the G20 Meeting of Agricultural Ministers in Niigata, Japan.

Farm Level Analysis Network

The OECD leads a network of experts on farm level analysis (FLAN) that undertakes studies and exchange of experience on the use of micro level data for policy analysis. A series of reports investigating the determinants of farm productivity and sustainability performance and dynamics, including innovation and agricultural policies (Kimura and Sauer, 2015; Sauer, 2017; Bokusheva, and Čechura, 2017; Sauer and Moreddu, 2020, Antón and Sauer, 2021) has been discussed in the Network and published in the OECD Food, Agriculture and Fisheries Paper series.

Recent publications:

- OECD (2021), "Policies for the Future of Farming and Food: How to improve productivity, sustainability and resilience?" (Booklet on PSR Policy Framework), https://issuu.com/oecd.publishing/docs/policies_for_the_future_of_farming_and_food.
- OECD (2021), "Policies for the Future of Farming and Food in Norway", Chapter 4 on the Agric. Innovation System, https://doi.org/10.1787/20b14991-en.
- Anton, J. and J. Sauer (2021), "Dynamics of Farm Performance and Policy Impacts: Main Findings". OECD Food, Agriculture and Fisheries Papers, No. 164, OECD Publish., https://doi.org/10.1787/af1f4600-en.
- OECD (2020), "OECD Agro-food Productivity-Sustainability-Resilience Policy Framework", https://one.oecd.org/document/TAD/CA/APM/WP(2019)25/FINAL/en/pdf.
- Sauer, J. and C. Moreddu (2020), "Drivers of farm performance: Empirical country case studies", OECD Food, Agriculture and Fisheries Papers, No. 143, OECD Publish., https://doi.org/10.1787/248380e9-en.

Website: http://www.oecd.org/agriculture/topics/agricultural-productivity-and-innovation/

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AGRICULTURAL SEED AND FOREST REPRODUCTIVE MATERIAL CERTIFICATION SCHEMES

The following three criteria; 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 identification of origin (region or provenance), 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 eight Seed Schemes establish rules and standards for varietal inspection and certification of seeds from OECD listed varieties. Sixty-one countries are currently a member of at least one of the Schemes.

The List of Varieties Eligible for OECD Certification covers 204 species – including all major crops – and more than 67 000 varieties. OECD statistics indicate that the total weight of OECD certified seeds traded corresponded to 1.2 billion kg in 2018/19. The electronic database provides an online search facility for OECD listed varieties and is available from the official website (see below).

In order to assess the current and future needs of international certification, the OECD Seed Schemes have established a number of Ad-Hoc Working Groups and holds regular discussions with their Technical Working Group to examine issues, explore new opportunities and develop new procedures. One of the key issues for the OECD Seed Schemes is the emerging role of biochemical and molecular techniques (BMT) in describing and identifying varieties. This is a rapidly developing field with more and more DNA based techniques available. The 2021 Annual Meeting reflected on the growing importance of these techniques in seed certification and agreed that the Ad-Hoc Working Group on BMT should continue its work as a permanent Advisory Group on BMT. The group will play a key role in the registration of new BMTs under the OECD Seed Schemes.

International organisations such as OECD, International Union for the Protection of New Varieties of Plants (UPOV) and International Seed testing Association (ISTA) need to pursue these new techniques carefully in order to maintain the integrity of the seed sectors international regulatory framework. A joint OECD-UPOV-ISTA Workshop on BMTs took place in June 2019. Participants discussed the development of a joint document explaining current activities related to BMT, including an inventory molecular marker techniques and a list of terms and their definitions as used by the three Organisations. The organisations are currently working on the establishment of a joint list of BMTs applied under their regulatory frameworks. In 2020, UPOV launched a survey amongst its members to collect information on the different BMTs applied in breeding and variety testing. The OECD Seed Schemes collaborated with UPOV and shared its experiences with the organisation which they gained during the development of the list of BMTs under the programme.

The OECD Forest Seed and Plant Scheme encourages the production and use of forest reproductive material that has been collected, processed and marketed in a manner that ensures their trueness to name. It is currently implemented in 30 countries. The Scheme's rules were recently completed by including the "Tested" category and new types of basic materials, such as clones, clonal mixture and parents of families. Moreover, the Scheme is now adapted to deal with multifunctional forest trees.

The Scheme is exploring possible ways to adapt to and mitigate climate change. The scheme is collaborating with organisations such as Kew Gardens or EUFORGEN, to better understand and communicate the importance of the origin of forest reproductive material in afforestation reforestation and in forest tree plantations. The certification of origin is becoming more and more important as it provides information to foresters on the adaptation potential of the forest reproductive material. Some countries have introduced DNA based control systems to check the true origin (region of provenance) of the imported forest tree seeds, parts of plants or plants.

Advanced forest reproductive materials such as clones are playing an increasingly important role in certain parts of the forestry sector and therefore registration of this type of basic material has increased significantly. However, the certification of forest clonal material is becoming increasingly challenging for National Designated Authorities and BMTs may play a key role in their certification in the future.

Upcoming events:

Agricultural Seed Schemes:

- Technical Working Group Meeting: 24-27 January 2022, Egypt (tbc)
- 2022 Annual Meeting of the OECD Seed Schemes: 13-17 June 2022, Tallinn, Estonia

Forest Seed and Plant Scheme:

- Technical Working Group Meeting: 10-11 May 2022
- 2022 Annual Meeting of the National Designated Authorities: 4-5 October 2022, OECD Headquarters

Recent publications:

- 🕮 OECD Seed Schemes: Rules and regulations; 2021 edition
  [fr.]: Systèmes des semences de l'OCDE : Règles et directives ; édition 2021
- 🕮 List of Varieties Eligible for Seed Certification; January 2021
- 🕮 OECD Forest Seed and Plant Scheme "2019" (Rules and Regulations)

[fr.]: Système de l'OCDE pour les semences et plants forestiers "2019" (Règles et Directives)

Web sites: https://www.oecd.org/agriculture/seeds/
https://www.oecd.org/agriculture/forest/
Promotional video on the OECD Forest Scheme: https://youtu.be/nqGXYz5Sln4.

Contact: Csaba Gaspar (TAD/COD)

CO-OPERATIVE RESEARCH PROGRAMME: SUSTAINABLE AGRICULTURAL AND FOOD SYSTEMS

The OECD Co-operative Research Programme (CRP) changed from the Co-operative Research Programme: Biological Resource Management for Sustainable Agricultural Systems to the Co-operative Research Programme: Sustainable Agricultural and Food Systems on 1 January 2021. This change reflects the current and emerging policy issues facing agriculture. The shift towards a food systems approach to policy analysis to tackle the "triple challenge" of providing food security and nutrition, and ensuring livelihoods while using natural resources sustainably is in line with the declaration adopted by Agriculture Ministers in 2016 and the work of the Committee for Agriculture. It is also fully aligned with OECD strategic objectives in relation to the need for integrated interdisciplinary approaches in obtaining sustainable solutions. The change in title does not affect CRP including fisheries and forestry research.

The CRP has 26 participating OECD countries and 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 are addressed by the Programme in its current mandate period (2021-2025): 1) Managing Natural Capital; 2) Strengthening Resilience in the Face of Multiple Risks in a Connected World; and 3) Transformational Technologies and Innovation.

The Call for Applications for funding of international conferences and fellowships (individual research projects) in 2022 was opened from the beginning of April until midnight (Paris time) of 10 September 2021. Information about the Call for Applications and about previous fellowships and conferences and workshops are on the CRP website (www.oecd.org/agriculture/crp).

The next Call for Applications will be for funding in 2023 and will open at the beginning of April 2022, closing at midnight on 10 September 2022.

CRP's activities in both 2020 and 2021 were severely impacted by the COVID-19 pandemic and most of the activities have been postponed, either to the end of 2021, but mostly to 2022.

CPR (Co-)Sponsored Conferences and Workshops which have taken place in 2021

- Grazing in Future Multi-Scapes: From thoughtscapes to Landscapes, creating health from the ground up, Lincoln, New Zealand, May and June 2021

This International Workshop, which should have taken place in Lincoln, New Zealand in December 2020 as a three-day conference, was re-organised as a series of online workshops in May and June 2021. The purpose of the event was to influence future models of pastoralism framed in different scapes (thought, social, land, food, health and policy-scapes) that will cultivate a shift in thinking towards future models of sustainable multipurpose pastoralism. The process of

deciding the future of pastoral production systems is often exclusionary however, failing to capitalise on the synergies across the spectrum of policymakers, stakeholders, views, policies, needs and feelings. A solution is using the notion of 'multiscapes', an integrative agro-ecological -pastoral-systems design that operates across multiple domains (e.g. thought-, social-, land-, food-, health-, wild-scapes), simultaneously.
The workshop ideas were further developed during two meetings the organisers had with the Hon Damien O'Connor, Minister of Agriculture, Minister for Biosecurity, Minister for Land Information, Minister for Rural Communities, and Minister for Trade and Export Growth. These on-line meetings discussed potential plans for how to reflect on changes needed at the government level when setting policies in the context of climate change and its impacts on pastoral agriculture. One of the main actions emerging from these conversations was the organisation of a 'climate change and holistic management' retreat with governmental agencies and the NZ Prime Minister. The organisers have also had two meetings with the Environment Canterbury (ecan.govt.nz) Council and research and extension team, in which visions of future designed pastoral systems were presented for approval and support. Actions from these meetings included a more direct involvement of this governmental agency in science related to change in the New Zealand pastoral systems and industry. Several of the participants also formulated a proposal to FAO for work around pastoral land, governance, identity and future uncertainties from the point of view of education, environmental politics and political ecology.

- Assessing the State of Global Plant Health in Natural and Cultivated Ecosystems, Toulouse, France, 3-5 October 2021

Postponed from May 2021, this event took place as a hybrid event in Toulouse on 3-5 October 2021. It was the culmination of the work done by experts around the world on assessing plant health in their regions, as well as on the provisioning, cultural and regulatory services affected by plant health. The Global Plant Health Assessment (GPHA) aims to provide a first-ever overall assessment of plant health in the natural and human-made ecosystems. The first part of the event brought together experts who had made assessments based on published science and fact-based evaluations. The 27 reports covering cereal systems, roots and tubers, banana and plantain systems, fruit trees and grapes, peri-urban horticultural systems and household gardens, urban vegetation, and forest systems, were discussed. In addition, the workshop discussed the analysis and synthesis across specific reports; risks to plant health; policy recommendations; and dissemination of conclusions from the assessments. In addressing the critical needs and opportunities for defining and building global plant health policies, major points to be considered include the need to:

- address the lack of field data
- overcome the lack of accessible/standardised/documented data;
- address the state of publicly-funded extension systems;
- increase access and training of scientists for extension and for research;
- incorporate the impact of climate change on plant health in the next Intergovernmental Panel on Climate Change;
- document impacts on biodiversity;
- set plant health priorities for research;
- target breeding for plant disease resistance; and
- mitigate the unsustainable use of pesticides.

The second part of the event was an Open Conference with a broader audience broadcast live. Themes covered were: climate change and plant health; plant health and global food security; plant health in a One Health world; the economics of plant health; molecular plant pathology and plant diseases state and evolution; plant disease emergences; population genetics and biodiversity; plant disease risk assessment; successes and failures in integrated pest management; plant diseases in the networks of life and societies; and policies of plant health protection.

- First Conference on Farmer Centric On-farm Experimentation—Digital Tools for a Scalable Transformative Pathway, Montpellier, France, 13-15 October 2021

*******This conference was also held as a hybrid event. On-farm experimentation (OFE) combines the knowledge of farmers and experts to create valuable insights that are directly relevant to farm managers. It is a practical and adaptable mechanism to bridge the interests of farmers, researchers and other stakeholders, which has the potential to validate research and innovation to transform agriculture. This conference brought together practitioners and theoreticians around the theme of on farm experimentation on precision agricultural techniques to: expand the international network of OFE with farmers, researchers, policy and economic specialists; develop scientific and social guidelines and skills in relation to OFE; identify resources and tools to facilitate OFE; and advise policy makers. OFE focuses not only on the technical level, but also on the process of developing innovative tools in a co-creative process where the farmer is included in the development of the tools from the outset, rather than just being presented with the end product. Significant value is added by putting the farmer at the centre of the transformation of food systems, and demand for this transformation is increasingly important.

Outputs from the conference will be published and include:

- A concise OFE manifesto that establishes a common vision and concerted development strategies for farmer-centric OFE as an innovation research sector (opportunities, barriers, milestones).
- A set of public & institutional policy recommendations to foster OFE, focusing on digital technologies and scaling.
- A list of "Conference learnings", including desired strategic research directions, prominent comments, orphan items and practical suggestions to capture other progress made during the conference and inform future activities.

- Agriculture as an Actor of Social Inclusion (AGASI), Nitra, Slovak Republic, 14-15 October 2021

This international conference, held as a hybrid event on social farming was organised by the Slovak University of Agriculture in Nitra. International experiences and research results were showcased, with a special focus on experiences in the V4 group (Czech Republic, Hungary, Poland and Slovakia). In the spirit of OECD meetings, the conference offered an opportunity for peer learning. The conference was particularly relevant for ongoing work in the Committee for Agriculture (COAG), sharing experience in developing best practices in policy making and highlighting the importance of collecting data and evidence. The Conference also identified areas of future interest at the intersections of food systems, human capital and skills, and agriculture as a vector of social inclusion in rural areas.

The conference included high-level speeches from the Slovak Minister of Agriculture and Rural Development, Mr. Samuel Vlčan, the Head of the EC Representation in Slovakia, Mr. Ladislav Miko, as well as the Vice-Rector of the Slovak Agricultural University in Nitra Mr. Ivan Takáč.

CRP Fellowship of particular interest to the ICGB which have taken place in 2020 or 2021:

- Death of spruce in Central Europe: Disaster or opportunity?

Spruce – the main European timber commodity – is dying across Central Europe. The reason is an outbreak of the spruce bark beetle, triggered by climatic changes and fuelled by plantation forest management. Empirical evidence on the outcomes of different management styles for dealing with this problem are missing. This research project used molecular biodiversity assessment to test the environmental impact of two different responses to the beetle outbreak - salvage logging versus natural stand decay and regeneration- with respect to insect biodiversity, endangered species, and bark beetle natural enemies. The suitability of the two approaches for different forest management objectives was discussed. From preliminary observations, natural stand disintegration supports less insect abundance but more valuable, true forest species, while logging replaces the entire ecosystem. Natural disintegration and regeneration would then be warranted in stands where environmental protection is the objective, such as in National Parks. The outcomes of the project will be distributed to stakeholders in government administrations, university entomologists, conservation non-profits and forestry practitioners.

- Genetically engineering Toxoplasma gondii as a novel vaccine delivery system

This research project focused on developing a new veterinary vaccine delivery system based on an attenuated Toxoplasma gondii strain that can be customised to express vaccine antigens of other pathogens. This has multiple potential benefits for both public health and livestock animal welfare, including protection of meat animals against T. gondii infection. This would lower parasite transmission to human populations, which the current T. gondii veterinary vaccine (based on a live-attenuated strain) does not achieve, as this is only used in reproductive animals (sheep) and not in meat production. Toxoplasma gondii is the causal agent of toxoplasmosis, which is considered the third-most important foodborne disease by the WHO and EFSA, infecting more than one billion people worldwide and billions of livestock. Infection in humans is acquired through the ingestion of tissue cysts in undercooked meat or oocysts contaminating food or water. Disease prevention remains the most effective control measure; while vaccines for humans does not exist, a live vaccine used in sheep is licensed in some countries (incl. UK, Ireland, France and New Zealand), based on an attenuated strain of the parasite that cannot persist within the host. This provides the theoretical basis for this project. T. gondii is amenable to genetic modification, and specific genes that are key to parasite persistence have been identified. This allows the generation of programmable parasites that can be engineered to no longer persist within the host. This would mimic the current T. gondii vaccine, but generated through a more controlled and targeted approach. This modified, non-persistent strain would form the basis of the vaccine delivery system.

- Resilient pest management programmes in horticultural crops based on increased plant defensive responses

Plant defences induced by arthropod predators could offer an opportunity to increase crop resilience. Investigating the tritrophic system plant/pest/natural enemy could provide a scientific basis for developing novel and sustainable crop protection practices. The ultimate goal of this research is to provide a scientific basis for developing novel and sustainable technology to manage crop protection. This was done by investigating the mechanism of volatiles produced by an important species of zoophytophagous predator commonly used in biological pest control, Nesidiocoris tenuis. In particular, the work focused on tomato and sweet pepper, two of the most important horticultural crops in EU and on the pest, Aulacorthum solani. The results of this research demonstrate that developing new non-chemical tools is possible, and focus on the concept of “resilience” as a new approach to agricultural pest management. Sharing this approach with policy makers and stakeholders, environmental organisations and the public in general and/or transferring this kind of scientific methodology to commodity producers and farm advisors can increase the adoption of new agricultural practices, to achieve a step change in sustainability and food security. The researchers plan to present the results at meetings of institutions working on sustainable pesticide use, including farmers’ organisations and technical workshops.

- Understanding the mechanisms involved in epigenetic variability and inheritance in plants

The project initiated a study on epigenetic variability and its inheritance in plants, and to 1) identify mechanisms involved in the inheritance of epigenetic modifications across generations, and 2) study the implications of epigenetic variability in fruit tree response to biotic stress. Epigenetic regulation plays a key role in plant response to the environment, in establishing reproductive barriers and gene inheritance. Therefore, characterisation of epigenetic variation and its link with phenotypic variability in crops (in fruit trees in particular) can provide relevant scientific information on the contribution of epigenetic changes to adaptation and stability. Moreover, this knowledge will have important implications for advanced plant breeding. The way plants respond to environmental changes and to stress varies among genotypes of the same species, denoting a natural genetic variability favouring adaptation (ability to respond positively to changes) and resilience (ability to recover after a stress). It has been demonstrated that epigenetic regulation plays a key role in many biological processes, including plant reproduction and plant response to the environment. Understanding and characterising how epigenetic mechanisms participate in this processes in apples (the plants studied in this project) will have important implications for apple breeding and will help with the selection of natural resources to successfully address new challenges in agriculture and food production, increasing resource use efficiency and lowering inputs.

Note: The call for applications for the submission of applications for 2023 research fellowship awards and conference sponsorship will be open from April 2022 until 10 September 2022.

All relevant information and application forms will be available on the CRP website, through the link: www.oecd.org/agriculture/crp.

Recent publications and papers:

- Biswas A. et al. (2021), "Electrosprayed cashew gum microparticles for the encapsulation of highly sensitive bioactive materials", Carbohydrate Polymers, Ed. Elsevier, Vol. 264; https://doi.org/10.1016/j.carbpol.2021.118060
- Bravo-Oviedo A. et al. (2021), "Similar tree species richness-productivity response but differing effects on carbon stocks and timber production in eastern US and continental Spain", Science of the Total Environment, Ed. Elsevier, Vol. 79 ; https://doi.org/10.1016/j.scitotenv.2021.148399
- Kabeya N. et al. (2021), "Long-term Hydrological Observations in a Lowland Dry Evergreen Forest Catchment Area of the Lower Mekong River, Cambodia », Japan International Research Center for Agricultural Sciences, Vol. 55, Issue 2, pp.177 190; https://doi.org/10.6090/jarq.55.177
- Jefferson, O.A, et al. (2021), Transgenic Research, Volume xx, pp 1-15, "Mapping CRISPR-Cas9 public and commercial innovation using The Lens institutional toolkit", Springer; https://link.springer.com/article/10.1007/s11248-021-00237-y
- Shimada T., T. Endo, H. Fujii, A. Rodríguez, T. Yoshioka, L. Peña and M. Omura (2021) "Biological and molecular characterization of linalool-mediated field resistance against Xanthomonas citri subsp. citri in citrus trees", Tree Physiology, 1–18; https://doi.org/10.1093/treephys/tpab063
- Butterbach-Bahl K., D.E. Pelster and C. Scheer (Eds.) (2020), Current Opinion in Environmental Sustainability, Volume 47, Special issue, "Climate Change, Reactive Nitrogen, Food Security and Sustainable Agriculture", Elsevier; https://www.sciencedirect.com/journal/current-opinion-in-environmental-sustainability/vol/47
- Graff, G.D. and J.S. Sherkow (2020) Annual review of genomics and human genetics, Volume 21, pp 509-534, "Models of Technology Transfer for Genome-Editing Technologies", Annual Reviews; https://www.annualreviews.org/doi/pdf/10.1146/annurev-genom-121119-100145
- Lozano-Pérez A. A., M. Grbic et al. (2020), "The silk of gorse spider mite Tetranychus lintearius represents a novel natural source of nanoparticles and biomaterials", Sci. Reports 10; https://doi.org/10.1038/s41598-020-74766-7
- Vendrell-Flotats M., T. García-Martínez, I. Martínez-Rodero, M. Lopez-Bejar, J. LaMarre, M. Yeste and T. Mogas (2020), "In Vitro maturation with leukemia inhibitory factor prior to the vitrification of bovine oocytes improves their embryo developmental potential and gene expression in oocytes and embryos", International Journal of Molecular Sciences 21(19), 7067; https://doi.org/10.3390/ijms21197067
- Vendrell-Flotats M. et al. (2020), "In vitro maturation in the presence of Leukemia Inhibitory Factor modulates gene and miRNA expression in bovine oocytes and embryos", Scientific Reports 10, 17777; https://doi.org/10.1038/s41598-020-74961-6

Website: www.oecd.org/agriculture/crp

Contacts: Janet Schofield (TAD/PROG), Guillaume GRUÈRE (TAD/ARP)

COMING OECD EVENTS FROM DECEMBER 2021

6-7 December 2021	OECD Conference “Technology In and For Society: Responsible Innovation for Inclusive Transitions”, OECD Paris/hybrid event (Contact: D. Winickoff, STI/STP)
8-9 December 2021	14th Meeting of the Working Party on Biotechnology, Nanotechnology and Converging Technologies (BNCT), OECD Paris (Contact: D. Winickoff, STI/STP)
24-27 January 2022	OECD Agricultural Seed Schemes: Technical Working Group Meeting, Egypt (t.b.c.) (Contact: C. Gaspar, TAD/COD)
28-30 March 2022	29th Meeting of the Working Party for the Safety of Novel Foods & Feeds, OECD Paris (Contact: N. Komoto, ENV/EHS)
30 March–1 April 2022	36th Meeting of the Working Party on the Harmonisation of Regulatory Oversight in Biotechnology, OECD Paris (Contact: A. Kagoshima, ENV/EHS)
4-6 May 2022	15th Meeting of the Working Party on Biotechnology, Nanotechnology and Converging Technologies (BNCT), OECD Paris (Contact: D. Winickoff, STI/STP)
10-11 May 2022	OECD Forest Seed and Plant Scheme: Technical Working Group Meeting (Contact: C. Gaspar, TAD/COD)
10-12 May 2022	OECD Conference on Innovating Microbial Pesticide Testing, OECD Paris (Contact: M. Sachana, ENV/EHS)
13-17 June 2022	OECD Agricultural Seed Schemes: Annual Meeting of the National Designated Authorities, Tallinn, Estonia (Contact: C. Gaspar, TAD/COD)
4-5 October 2022	OECD Forest Seed and Plant Scheme: Annual Meeting of the National Designated Authorities, OECD Paris (Contact: C. Gaspar, TAD/COD)
November 2022 (date t.b.c.)	The 2022 OECD Green Growth and Sustainable Development (GGSD) Forum on “The impact of COVID-19 on innovation for green growth” (Contact: K. Kitamori, E. Botta, ENV/GGGR)

OECD
BETTER POLICIES FOR BETTER LIVES

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 personalise 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.

Visit the OECD Biotechnology Update website to access the latest news and previous editions. You can also sign up to the OECD Biotechnology Update newsletter to receive future editions directly to your inbox.

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- OECD's portal: www.oecd.org
- OECD's work on green growth: www.oecd.org/greengrowth (Eng.) www.oecd.org/croissanceverte (Fr.)
- OECD's global fora portal: http://www.oecd.org/global-relations/globalforums/ (Eng.) www.oecd.org/fr/relations-mondiales/forumsmondiaux (Fr.)
- OECD's work on biosafety and food/feed safety for transgenic products, "BioTrack" Online: www.oecd.org//biotrack
- OECD's BioTrack products database: https://biotrackproductdatabase.oecd.org
- OECD Conference on dsRNA-based Products: http://www.oecd.org/chemicalsafety/pesticides-biocides/conference-on-rnai-based-pesticides.htm
- OECD's work on biodiversity: www.oecd.org/environment/resources/biodiversity/
- OECD STI's emerging technologies; biotechnology, nanotechnology and converging technologies (BNCT): www.oecd.org/sti/emerging-tech
- OECD's key biotechnology indicators (KBI): oe.cd/kbi
  OECD's key nanotech indicators (KNI): oe.cd/kni
- OECD TAD's work on bioenergy: http://www.oecd.org/tad/agricultural-trade/bioenergy.htm
- AMIS biofuel policies database: http://statistics.amis-outlook.org/policy/
- International Energy Agency (IEA) work on renewable energy: http://www.iea.org/topics/renewables/
- Biofuture Platform (BfP), IEA facilitator: http://biofutureplatform.org/
- OECD's work on agricultural productivity and innovation: www.oecd.org/agriculture/topics/agricultural-productivity-and-innovation
- OECD's seed certification schemes (agriculture, forest): http://www.oecd.org/agriculture/seeds http://www.oecd.org/agriculture/forest

  OECD's Cooperative Research Programme: Sustainable Agricultural and Food Systems: www.oecd.org/agriculture/crp

WHO'S WHO IN BIOTECH AT OECD?

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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 38 member countries[2]. 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 also 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 more than 300 committees, expert and working groups, which undertake the Organisation's programme of work. The governments of the Member countries nominate the participants to all these groups.

[2] OECD member countries are: Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, 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, Nanotechnology and Converging Technologies (BNCT)
- Working Party of National Experts on Science and Technology Indicators

Committee for Agriculture (COAG)

- Working Party on Agricultural Policies and Markets (APM)
- Co-operative Research Programme: Sustainable Agricultural and Food Systems
- 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 Party on Biodiversity, Water and Ecosystems (WPBWE)
- Working Party on Climate, Investment and Development (WPCID)

Chemicals and Biotechnology Committee (CBC)

- Working Party on the Harmonisation of Regulatory Oversight in Biotechnology (WP-HROB)
- Working Party for the Safety of Novel Foods and Feeds (WP-SNFF)

Internal Co-ordination Group for Biotechnology

ICGB Newsletter No. 40