ORGANISATION DE COOPÉRATION ET DE DÉVELOPPEMENT ÉCONOMIQUES

OECD BEST PRACTICES FOR ASSESSING THE SUSTAINABILITY OF BIO-BASED PRODUCTS

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Alexandre Bartsev, PhD
Policy Analyst
OECD Biotechnology Unit

What are Best Practices?

1. **Best practices:** the most efficient (least amount of effort) and effective (best results) way of accomplishing a task, based on repeatable procedures with proven value.
2. **Target:** Policy makers and industry
3. **Scope:** Bio-based products
4. **Goal:** Assessment of the environmental and economic sustainability of bio-based products

OECD Best Practices – 2 Options

Option 1:

- Technical guidance document – a scope of best practices to identify indicators, evaluation approaches, software tools, *etc.* under a given sustainability framework.
- The Workshop outputs would serve as a basis for the document (Best Practices).
- To be released as an OECD Publication for wide dissemination through various means.

Option 1 – Tech Guidance

Expected impact: "medium"

Audience: practitioners community first; the policy community in the long term run.

OECD level of delivery: Committee

Delivery timeline: end 2010

Option 2 – OECD Instrument

Expected impact: "high"

Audience: policy makers

High level document identifying principles and best practices in non-technical language

OECD level of delivery: OECD Council

While a Recommendation of the OECD Council is a non-legally binding document, it represents an important political commitment on the part of the Member countries

Delivery timeline: end 2011

3 elements of an OECD instrument

1. **Principles** – objectives and a framework for the voluntary assessment of the environmental and economic sustainability of bio-based products
2. **Best Practices** which are practical means for putting into place that framework
3. **Explanatory Annotations** which explain, elaborate and provide background information on the Principles and Best Practices

   (definitions, examples, options, references)

OECD Instruments

The development of an OECD Recommendation by Council entails:

i. A series of expert level negotiations (1-2 years)

ii. A public consultation

iii. Negotiations amongst OECD countries to reach political consensus on text

iv. Adoption – country agreement to implement the Recommendation and to report on progress

v. New accession countries to the OECD will be evaluated against the Recommendation during the accession process

Way Forward & Impact

- The way forward depends on the outcomes of this workshop
- Both options (Technical Best Practices or the OECD Council Recommendation) may serve as a basis for the development of national policies or, possibly, an ISO standard for Assessing the Sustainability of Bio-based Products

Goal of the Session III

To discuss the scope, structure and content of Best Practices

The choices should be supported by examples of *existing* best practices (indicators, evaluation tools, *etc*)

To identify which stakeholders (industry, government, academia, consumers) would be responsible for implementing each Best Practice

OECD Best Practices

Assessment Goal and Scoping

- Sustainability assessments must be conducted with a clear purpose and stated objectives
- Sustainability assessments should inform policy decisions.
- Defining the purpose of the analysis and the scope is a critical first step and should be done at the outset of any sustainability assessment.
- The scope should be narrow and time limited, while maintaining the integrity of the assessment, as per the stated purpose and objectives of the assessment, consistent with the system components of interest (functional unit and boundaries) and key impact processes involved.
- Scoping must take into account available data and information, and what can realistically be achieved in the assessment.

OECD Best Practices

General Principles and Best Practices

- The production of bio-based products should contribute to economic and environmental sustainability, especially in comparison with conventionally produced products .
- In assessing the sustainability of bio-based products the whole product Life Cycle should be considered which includes: *(i)* biomass pre-treatment and conversion;*(ii)* extraction and processing; *(iii)* bioprocessing; *(iv)* process waste management; and *(v)* post-consumer waste management.
- The production of bio-based products should use renewable natural resources in a sustainable manner.

OECD Best Practices

General Principles and Best Practices (*cont.*)

- Biomass and other raw materials used for the production of bio-based products should not: contribute to rises in food prices; create land-use competition for crop production; reduce biodiversity; decrease the quality or quantity of surface and ground water; or contribute to the deterioration of the climate .
- Calculated over the whole life cycle, the use of biomass for production of bio-based products should produce less greenhouse gases emissions than on average with fossil fuels .
- The sustainability assessments of bio-based products should be conducted by independent bodies or agencies.

OECD Best Practices

Assessment Framework

- The assessment framework used for the sustainability assessment should clearly guide the selection of appropriate methods , indicators/metrics, and the interpretation of results.
- The sustainability assessment should generally adopt the Life Cycle Thinking framework.
- The selection of this one framework does not prohibit the incorporation of others. Components of other frameworks can be incorporated in order to adequately assess environmental, social and economic sustainability (e.g., incorporating Capital Accounts within Life Cycle Thinking).

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Operational Method

- The operational method should be science-based, broadly used, practical, verifiable and help achieve the goals and scope of the assessment.
- The operational method should be flexible enough to keep pace with rapid advances in the area of sustainability assessment of bio-based products.
- The functional unit, system boundaries, subsystems, and impact categories as relevant within an LCA method should be clearly defined.
- The operational method should allow comparisons between bio-based products.

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Operational Method *(cont.)*

- It is important to continue to shape LCA in such a way as to include appropriate elements of economic and social assessments.
- Cost-Benefit Analysis (for a microeconomic focus) and Accounting Methods (for a macroeconomic focus) are recommended as the best practice for incorporating social and economic considerations into LCA. But the integration of these methods into LCA remains a challenge (i.e., commensurability barriers).
  - Where possible, LCAs should be used to determine which type of biomass is best suited for a particular bio-based product by considering location-specific parameters for evaluation. Nevertheless, LCAs should not be used to replace a careful evaluation by other means of the local and regional environmental impacts.

OECD Best Practices

Indicator Selection

- To ensure progress towards global sustainability targets in developing bio-based products, the nationally used bio-based products sustainability indicators/metrics should be consistent with one or several of accepted pan-national frameworks.
- A set of core (minimum requirement) indicators that correspond to the most important targets should be defined. The core indicators should be validated, widely used and practical for the sustainability evaluation of bio-based products.
- A set of location or region-specific indicators should be defined to complement the core set of indicators in addressing the local geographic, natural, climate conditions that might influence the sustainability assessment of bio based products.

OECD Best Practices

Indicator Selection *(cont.)*

- The indicators selected should be commonly-accepted within the field of sustainability assessment for bio-based products, as chosen against a standard set proposed by the best practice .
- Indicators should be determined systematically based on the operational method (*i.e.*, to correspond to the adopted framework, the assessment method(s), and the system components and key impact processes involved).
- There should be an established scientific link between the indicator and the component or impact of interest.
- Indicators selection should take into account available data and information, ease of measurement, feasibility of data collection, and cost-effectiveness.

OECD Best Practices

Indicator Selection *(cont.)*

- Indicators must produce the information necessary to meet the objectives of the assessment and analysis needs, including the sensitivities of the measure to change, adequacy of the available time series and spatial coverage, and requirements for statistical analysis and modelling.
- The number of indicators should be minimized while meeting the needs of the assessment (a parsimonious indicator set).
- The sets of indicators used should allow the generation of comparable results; should be applicable to firms; should be used to ensure the comparability of results within different production entities and technologies used for manufacturing a given bio-based product.

OECD Best Practices

Comparing between Products

- Methodological choices should be guided by the needs to make comparisons, working towards a standardization of approaches.
- Ideally, an LCA for a particular product will be designed similarly to that of the product for which a comparison is required. For example, the results of an LCA for a bio-fuel should be comparable to one for a fossil fuel. Comparability is a large challenge in LCA that requires further work.
- Methodological choices made in the assessment (*i.e.*, functional unit, system boundaries, impact categories) should be clearly defined by the study to facilitate subsequent use in comparisons.
- In order to simultaneously assess environmental, economic and social sustainability, the use of common functional measurement units is ideal.

OECD Best Practices

Data and Knowledge Gaps

- Data caveats and limitations specific to the analysis (*i.e.*, data quality issues, data gaps, and uncertainties) should be clearly stated in the LCA.
- Data should be used only from sources where data caveats and limitations are clearly defined.
- Key knowledge gaps specific to the analysis should be clearly stated, and how this likely affected the results defined.

Best Practices

Flexibility of the Approach

(*i.e.*, ability to respond to feedback, unforeseen developments)

- LCA is a growing field and much research is underway. New information, findings and developments should be incorporated into future assessments.
- To support the continuous improvement of the sustainability assessment methods, applicable lessons learned from previous studies should be referenced, and an explicit description provided of how these consideration influenced the current analysis.

Other BPs

Other best practice topics might include:

- Documentation and reporting requirements
- Responsibilities and support

Thank you !

Example (OECD GUIDELINES FOR THE LICENSING OF GENETIC INVENTIONS)

4. Commercial Development

Principles

4. A Foundational genetic inventions should be licensed so as to be broadly accessible.

4. B Licensing practices should be used as an effective means to create value for licensors and licensees through the development of new products and services from genetic inventions.

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Best Practices

4.1 Should several licenses be required, license agreements should include a mechanism to set a reasonable overall royalty burden for genetic invention products and services, including research tools.

4.2 License agreements should include terms that maintain low barriers for access to genetic inventions. This may mean that such agreements do not include, for example, excessive up-front fees.

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Annotations

4. Commercial Development

In genetics, as in other fields, there are numerous revolutionary inventions, which have been designated in these Guidelines as "*Foundational Genetic Invention*". *For the purpose of these Guidelines, the term "foundational genetic invention" is a genetic invention which provides for a new field of research or medical practice. If such inventions were not broadly accessible at reasonable costs, a field of research or medical practice would be inhibited. Examples of foundational genetic inventions include polymerase chain reaction (PCR), the Cre-Lox system, a general nucleic acid probe useful in a variety of contexts such as a telomere probe, Cohen and Boyer's recombinant DNA methodology and RNAi. In view of their far-reaching impact, the Principles advocate the broadest access to foundational genetic inventions.*

Foundational genetic inventions may include certain research tools. For the purpose of these Guidelines, "research tools" may be considered a composition or method useful in conducting experiments. This term could embrace a broad range of resources that scientists use in the laboratory including, but not limited to, cell lines, monoclonal antibodies, reagents, animal models, growth factors, combinational chemistry, genomic and proteomic libraries, drug and drug targets, clones and cloning tools, methods, laboratory equipment and machines, databases and software.