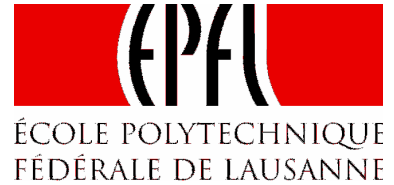


# Roundtable on Sustainable Biofuels

An initiative of the EPFL Energy Center



## Background paper on Technologies

7<sup>th</sup> Virtual Meeting of the Working Group on Environment 3<sup>rd</sup> April 2008 – 3pm GMT

### ***1. Summary:***

The Working Group will have to discuss and validate:

- **The concept of a principle on Technologies rather than only biotechnologies or GMOs.**
- **The principle on Technologies (wording)**
- **The criteria on Technologies (content and wording)**
- **The set of definitions**

### ***2. Introduction:***

The second Expert Panel set by the RSB secretariat was dedicated to the technical discussions on the principle and criteria related to the use of biotechnologies within the biofuel value chain. The panel included personalities from the academic sector, industry, NGOs and civil society.

Throughout the discussions, the panel has tried to focus on rational points of understanding, regarding the potential biotechnologies carry to improve environmental or social performance of biofuels, as well as risks and concerns about their use.

One of the major suggestions of the Expert Panel is to broaden the principle to all the technologies used along the value chain, including biotechnologies such as GMOs. The panel found insufficient to address biotechnologies only while other technologies could be hazardous as well. Hence the principle is now extended to all technologies, with the criteria including specific requirements regarding the use of GMOs and other issues.

This proposal has been supported by the RSB Steering Board.

The secretariat would like to finalize the first draft of P&C on Technologies during the 7<sup>th</sup> Virtual Meeting. Further rounds of discussions will be organized in the forthcoming months to readjust and improve the content and wording of the principle and criteria. However, after this meeting we would like to send a version to the Implementation Working Group and eventually the Board that accurately reflects the vision of the for the content and direction of this principle.

The whole **history of discussions and background documents on Technologies** are available at: <http://cgse.epfl.ch/page68126.html>

**In order to finalize the principle and criteria, you are kindly requested to send any edit or comment you may have on this document prior to the Virtual Meeting. Edits or suggestions formulated during or after the virtual meeting might be difficult to integrate.**

### ***3. Recent points of discussion:***

#### **3.1 Elements discussed by the Expert Panels for P&C on Technologies:**

- The Expert Panel could not find a rational reason for a **specific principle on biotechnologies**, whereas other technologies would not have to comply. **A general principle on the potential benefits brought by technologies is suggested instead, with specification of main technologies involved (e.g. GMOs).**
- The ultimate objective to be achieved by Technologies must be an **increased productivity and a reduced use of inputs (water, fertilizers, etc...).**
- Benchmark for the environmental and social performance of biotechnologies: other existing practices (possibly intensive) under local conditions. Comparison: for a given amount of useful energy or a common functional unit.
- A major requirement is that **every actor must remain free to choose the use of a technology in full information and without external pressure or interference.**
- Transfer of **economic profit** along the value chain. We must ensure that every actor gets a benefit.
- A distinction must be made between the use of GMOs in **upstream biomass production** and **downstream biomass processing**, as the debates are rather focused on the former. Downstream processes must be maintained in contained systems.
- Some of the controversial GMOs (e.g. antibiotic markers) are no more in use and hence, not necessarily relevant in the debate on future biofuels.
- Mention must be made of national or standard legislation such as **the Cartagena Protocol**.
- **Technical details** such as plant sterility cannot be specified in the wording of the criteria, as the debate is still **highly controversial** and this technology involves trade-offs. General requirements such as **minimizing environmental and social risks** were deemed sufficient at this level of discussion and a sufficient safeguard.
- The responsibilities must be well-balanced among all the actors.
- The requirements must not be in contradiction with Intellectual Property.
- The definition of a “hazardous” technology is too sketchy to include this term in the wording.

#### **3.2 Feedback from the RSB Steering Board (SB) – 15 Feb 08:**

- Leaving biotechnology its own principle weighs the risks towards biotechnology, whereas there are other risks.
- The Steering Board agrees to broaden the principle to any hazardous technology; such a generic ‘risk’ principle would be future-proof.
- Biotechnologies must be included in a list of potentially risky technologies.

### ***4. Proposition from the Secretariat:***

<b>To be approved by the Working Group during the 7<sup>th</sup> Virtual Meeting</b>
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The following table tentatively includes the elements mentioned above; the elements in red are the edits proposed after the ENV WG 6<sup>th</sup> Virtual Meeting and SB Meeting.

11. The use of any technology must seek to increase process efficiency along biofuel value chain. <i>Alternative wording under discussion within the Expert Panel: <b>The use of any new technology must increase production efficiency and environmental safety in all stages of biofuel value chain</b></i>			
Criterion	Requirements	Responsibilities	Guidance for Implementation
11a Information and Transparency	Information on the use of technologies along the biofuel value chain must be fully available in accordance with national and international legislation on Intellectual Property	The technology provider is responsible for providing any technical information to the buyer. The producer is responsible for providing relevant information on the technologies used along the biofuel value chain.	<ul style="list-style-type: none"> <li>- The technology provider must not withhold any relevant information that might influence the choice of a producer to use a technology.</li> <li>- The producer must be able to provide information about any technology used along the biofuel value chain.</li> <li>- The use of hazardous technologies must comply with any relevant national and international legislation.</li> <li>- The use of biotechnologies must be in full compliance with the Cartagena Protocol on biosafety and relevant legislation.</li> <li>- The obligation to systematically indicate the presence of GMOs in the end-product must be defined in accordance with the consumer country's legislation.</li> </ul>
11b Freedom of choice and Ownership	All stakeholders in the value chain must respect the freedom over production and choice of technologies. The use of a given technology cannot be imposed on any stakeholder, except through legislation.	Producers, companies, banks, regulating authorities and all stakeholders involved in the biofuel value chain.	<ul style="list-style-type: none"> <li>- At any time, any stakeholder must be able to freely decide whether or not to use a given technology along the biofuel production process, in accordance with the Free Prior Informed Consent (FPIC).</li> <li>- One stakeholder's business model and strategy cannot deprive another stakeholder of his or her freedom and control over production and choice of technologies.</li> <li>- The provision of technologies should not be obtained in counterpart of a financial/material dependency, such as debt and feudality.</li> </ul>
11c Minimization of environmental risk	The choice of technologies used along the biofuel value chain must seek to minimize the risk of damages to environment	The responsibility of minimizing impacts on environment must be shared among all producers and providers. Regulating authorities are responsible for ensuring that least hazardous technologies remain financially competitive as compared with most hazardous technologies.	<ul style="list-style-type: none"> <li>- Following national or international technology risk assessments, the least damaging technologies must be preferred to the more damaging ones for a given functionality. Environmentally damaging technologies are understood as any practice or material with a known risk of physical, chemical or biological damage to ecosystems.</li> <li>- Any technology is considered damaging for the environment unless contrary <i>/positive</i> evidences have been provided, based on acknowledged national or international testing procedures. <i>3 alternative options from the Expert Panel: 1) erase this sentence; 2) Replace by "Technologies must be applied following national or international risk assessment and recommended mitigation measures must be followed to avoid environmental damage." 3) Replace by "Any new or modified technology is considered potentially damaging for the environment unless positive</i></li> </ul>

			<i>evidence has been provided, based on relevant, acknowledged research and national or international testing standards.”</i>
11d Use of Genetically Modified Plants, Micro-organisms and Algae for biomass production. <i>Alternative options: Use of Genetically Modified Organisms (GMOs - GMPs, LMOs, or GMMs) for biomass production / Use of Plant GMOs, Microbial GMOs, Algae GMOs for biomass production</i>	The use of Genetically Modified Plants, Micro-organisms and Algae / Genetically Modified Organisms (GMOs)/Plant GMOs, Microbial GMOs, Algae GMOs for biomass production must improve the productivity and maintain or increase social and environmental performance, as compared to the common practices and materials under local condition.	Producer, companies	<ul style="list-style-type: none"> <li>- An improved productivity is understood as a higher amount of biomass obtained per hectare/acre of cultivated crop.</li> <li>- An increased environmental performance is a lower amount of surface, water, chemicals or any other input used, for a similar or higher amount of biomass under local conditions.</li> <li>- An improved social performance is a reduction of the risk of crop failure/economic losses and/or an increased income for producers relative to available conventional technologies under local conditions, and a more equitable distribution of profit in the value chain.</li> <li>- Common practices are the conditions under which non GM Organisms of the same species are produced locally.</li> </ul>
11e Use of Genetically Modified Organisms (GMOs) in biomass processing	Genetically Modified Organisms (GMOs) for biomass processing must be used in contained systems only.	Producer and process unit owners.	The release of genetically modified material outside the biomass processing unit must receive the approval of national health and safety regulating authorities. In absence of enforced legislation on dissemination of genetically modified material outside processing units, this material can not be disseminated outside the contained systems of the biomass processing unit. This includes the treatment of water effluents and wastes.

## *Definitions (to be completed)*

1. Technologies involved in biofuels production:
  - **Biomass Production:** agricultural technologies (Use of Genetically Modified Organisms, tilling technologies, seedling technologies, harvesting technologies, use of fertilizers, use pesticides, etc...)
  - **Biomass Process:** Physical, Chemical and Biological Technologies involved in the transformation of raw biomass into biofuels, including bioengineering (use of enzymatic processes, Genetically Modified Organisms and others).
  - **Biofuel Transport and Storage**
2. Intellectual Property
3. Biofuel Value Chain
4. Cartagena Protocol on Biosafety
5. Free Prior Informed Consent
6. Risk Assessment
7. Genetically Modified Organisms/ Genetically Modified Plants/ Living Modified Organisms/ Genetically Modified Micro-organisms
8. Biomass production
9. Biomass processing
10. Contained system
11. Health and Safety regulating authorities
12. Water effluent