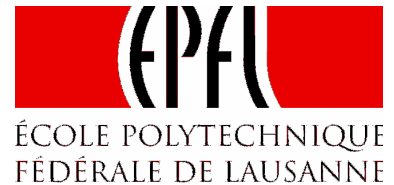


Roundtable on Sustainable Biofuels

An initiative of the EPFL Energy Center



9th Virtual Meeting of the Working Group on Environment, 30th May 2008

Principle and Criteria on Soils, Air and Water - Minutes

1. Background and Goals of this Teleconference

This Virtual Meeting is considered the last of the first phase of the Roundtable Sustainable Biofuels. The objective was thus to finalize the remaining principles and criteria on Soil, Air and Water. The meeting was based on the 4 background documents received by the Working Group members prior to the teleconference.

At the end of each section (soil, air and water), the updated version of the Principle and Criteria shows latest edits in **yellow**.

2. News

The Steering Board meets on 9th and 10th June. As many details need to be discussed in the P&C, the SB will validate a simplified version of the Principles and Criteria, which include all the Principles, the Requirements (considered here as criteria) and a key guidance, which will be taken from the ‘guidance’ part of the current tables.

Please note that all the elements related to the initial environmental impact assessment (soil health, water resources, air pollution) will ultimately be gathered under a unique principle.

3. General decisions and comments

- Based on the comment that the term “farmer” would not apply to biomass producers from agroforestry, the Working Group agrees to replace this term by “**biomass producer**” in all the principles and criteria.
- Some participants found the notion of “optimal level” difficult to implement. The Expert Panels agreed that this optimal level, whether for soil or water, will be evaluated locally through the consultation of local experts and community.
- The choice to articulate the P&C on “biofuel production” and not on “biomass production”, must be clearly explained somewhere in the introduction of the standard.
- For the three themes discussed, **no major disagreement** or missing elements were highlighted by the Working Group members, although some topics will request further discussions before being finalised.
- ‘Significant’ will be removed from all the tables.

4. Principle and Criteria on Soil

4.1 Principle

The Working Group agrees on the Secretariat’s proposition:

“Biofuel production shall not degrade soils. Soil management practices that seek to improve soil health shall be implemented.”

4.2 Soil erosion

Apart from two participants, the Working Group is in line with the Expert Panel on Soil’s opinion that no additional criterion is needed on soil erosion: In criterion 8c, managing physical health includes soil erosion and “irreversible soil erosion must not happen”, as stated in the guidance; the next sentence is also reformulated as: *“The optimal level of soil physical health is evaluated by local experts to ensure prevention of soil erosion as a major pathway for degrading soil health and productivity”*.

However, the issue of soil losses, from the perspective of ecosystem services, was still mentioned as a concern by some participants, which are invited to discuss with the Expert Panel on Soils on this point.

The Secretariat considers the Working Group is almost at consensus on the following points:

- No additional criterion is needed on soil erosion
- The guidance of criterion 8c is reformulated to emphasize soil erosion
- The Secretariat’s proposition to include the “landscape scale” under 8a (guidance) will be modified to refer to geophysical watershed (see 4.6).

4.3 Soil services

Comments from participants:

- It will be useful and relevant to define soil services according to the Millennium Ecosystem Assessment’s, i.e. through the benefits brought to people by these functions.
- There is no need to have a specific criterion since all the criteria aim to protect soil services and functions. In return, it must be clearly mentioned in the introduction/definitions, that the intent of the principle and criteria on soil is to ultimately protect soil services and functions.

The Working Group agrees to remove criterion 8f (soil services) from the table, with the mention in the introduction that the P&C on soil aims to protect soil services and functions. Soil services and functions will be detailed in the definitions.

4.4 Pesticides

The Working Group needed to decide of a reference for pesticides (FAO, WHO, Rotterdam/Stockholm Convention, Greenpeace).

The view of the Pesticide Action Network (PAN): “The WHO classification talks of 1A and 1B but as you know some pesticides such as endosulfan as very dangerous but it is classified as WHO Class 2 in the list so we at PAN feel that the list is not complete. PAN AP is advocating strongly that when we talk about alternatives to pesticide (paraquat) we are not talking about chemical to chemical replacement but instead the focus should be on looking at the alternative issue holistically such as seriously considering organic methods and integrated weed management methods. PAN AP has come up with a definition of Highly Hazardous pesticide, i.e. which have a high potential

to cause illness, injury or death to humans and animals or damage to the environment (Pesticides that are acutely toxic or for which there is evidence of carcinogenicity, mutagenicity, reproductive toxicity, immunotoxicity, endocrine disruption, neurological and developmental toxicity).”

Comments from participants:

- The [WHO’s pesticides classification](#) has an international acceptance from both governments and multinational companies.
- The Secretariat proposes to require that pesticides classified as IA and IB by WHO must not be used, as a minimum requirement, but in the course of continuous improvement, farmers should progressively give up the most hazardous remaining pesticides, with the ultimate objective of 0 synthetic pesticides.

The Working Group agrees to keep the WHO’s IA and IIB pesticides as the redline and to request progressive improvement from producers with the ultimate target of no or minimum use of synthetic pesticides and agrochemicals. Meanwhile, the Pesticide Action Network’s list will be further explored and possibly included in the future as a reference for banned pesticides.

4.5 Integrated Pest Management

The Working Group is supportive of keeping Weed, pest and disease management (IPM) in the good practices, not as a criterion. A requirement for Environmental Management System is also suggested (as a separate principle – in addition to the initial ESIA); IPM could be addressed as an element of a EMS.

4.6 Miscellaneous

- In order to show that this is not only the initial assessment that is needed but a continuous monitoring, **‘periodic’** is added to criterion 8a. The frequency of tests, as agreed by the Expert Panel on Soil, should be left to the assessment of local community and experts.
- The secretariat had proposed ‘landscape scale’ to be mentioned in 8a (guidance) to include effects happening in the surrounding areas as well, but the Working Group prefers using the term **‘geophysical watershed’**, with the condition to give a proper and exhaustive definition of watershed (especially the boundaries, as multiple scales are considered).

4.7 Principle and Criteria on Soil (draft version – June 2008):

Note: the introduction will mention that the intent of these principle and criteria is to protect soil functions and services toward people.

8. Biofuel production shall not degrade soils. Soil management practices that seek to improve soil health shall be implemented.

Criterion	Responsibilities	Guidance for Implementation
8.a Soil health assessment must be	Biomass producer	Soil health is composed of the Organic Matter content, the physical, chemical and biological health, as defined in this principle.

periodically performed appropriate to the scale and intensity of production		The scale and intensity of production determines the frequency of soil health assessments. Soil management needs to be approached from the perspective of the geophysical watershed.
8.b Soil organic matter (OM) content must be enhanced to its optimal level under local conditions	Biomass producer	The OM content of the soil must tend to reach its optimal level under local conditions. Producers shall continuously increase the OM content of the soil until this optimal level is reached. The OM content must in no case decrease over the long term. The optimal OM content is evaluated by local experts. The use of agrarian residual products must not be at the expense of other essential functions for the maintenance of soil organic matter (e.g. compost, mulch). The residual products of the biomass production and processing must be used optimally (e.g. no unnecessary burning or removal).
8.c The physical health of the soil must be enhanced to its optimal level under local conditions	Biomass producer	The physical health of the soil is evaluated by using indicators such as aggregate stability, erosion, compaction, infiltration rate, bulk density and any other relevant indicators. The optimal level of physical health is evaluated by local experts. Irreversible erosion or compaction must not occur. The optimal level of soil physical health is evaluated by local experts to ensure prevention of soil erosion as a major pathway for degrading soil health and productivity.
8.d The chemical health of the soil must be enhanced to its optimal level under local conditions	Biomass producer	The chemical health of the soil is evaluated by using indicators such as soil pH, cation exchange capacity, clay mineralogy, micro- and macro-nutrients availability, and any chemical processes and reactions ensuring soil health and renewability under local conditions. The optimal level of chemical health is evaluated by local experts. Pesticides classified under the WHO's Ia and Ib categories are prohibited. Continuous improvement must tend toward the absence of hazardous pesticides in the biomass production process.
8.e The biological health of the soil must be enhanced to its optimal level under local conditions	Biomass producer	The biological health of the soil is evaluated by using indicators such as, soil fauna and flora, respiration, microbial biomass, root system health, food webs and any other relevant indicators, as well as ecological process ensuring soil health and renewability under local conditions. The optimal level of biological health is evaluated by local experts.
8.f Processing wastes and byproducts must be managed such that soil health is not damaged	Processor	Processors should implement a waste and byproduct management and disposal plan that protects soils. Hazardous chemicals and their containers should be disposed of appropriately, or cleaned such that there is no risk of soil contamination. Mill effluents shall be treated and discharge quality monitored appropriately, in accordance with national regulations and sector-defined better practices.

5. Principle and Criteria on Air

5.1 Principle

After the 8th Virtual Meeting, the Secretariat formulated the 3 following options:

- 1) *Biofuel production shall not significantly increase air pollution*
- 2) *Biofuel production shall seek to minimize air pollution*
- 3) *Biofuel production shall take continual measures to reduce air pollution wherever possible*

The Working Group is supportive of the second option, with a slight change into: “*Biofuel production shall seek to minimize its contribution to air pollution*”. Some participants would prefer “impact” instead of “contribution”. “Pollution” could also be replaced by “quality”.

The decision will be taken by the Steering Board (9th and 10th of June 2008) between:

- *Biofuel production shall seek to minimize its contribution to air pollution*
- *Biofuel production shall seek to minimize its impact on air quality*

5.2 Air monitoring

- Periodic planning should be requested (in a similar language as for soil). **It is very likely that the Secretariat will include a general requirement for Farm Management Plan (appropriate to scale and intensity of production, as small producers cannot afford it), which is, furthermore, a very practical element for auditors.**

5.3 Emissions vs pollution

- After consulting experts, the monitoring of air pollution looks very complex and heavy. It hence looks more realistic to request producers to control the sources of pollution, rather than measuring the level of ambient pollution due to their contribution. The amount of inputs (ex: agrochemicals) is easier to monitor.
- There is confusion and a lack of consistency in the table, as the criteria combine elements of reduction at sources and regulation of air pollution. The criteria should rather focus on reducing the emissions of pollutants than regulatory measures.
- Are 10c and 10d useful, as another principle exists on compliance with law? The rationale is to minimise the sources of pollution and national norms on emissions was a practical benchmark.

5.4 Sprayed agrochemicals

- 10b is broadened to agrochemicals instead of pesticides only but as it is impossible to prevent a minimum level of pollution on the production site (agro-ecosystem), it must be clarified that this criterion is about surrounding ecosystems. Proposition of the Secretariat: *10b The use of pesticides shall neither affect the ecosystems surrounding the production site nor human populations*
- The FAO’s guidelines on the use of [ground applied pesticides](#) and [aerial pesticides](#) will be taken as a reference for 10b guidance.

5.5 National vs international norms

- 10d. Several opinions are confronted here: Some participants consider that compliance with national laws is already the case (and mentioned in a general principle on compliance) and that the RSB standard should go beyond (international norms), whereas others would like international norms to apply only when national requirements do not exist (but does it really exist?). Some participants are concerned that the complexity and price of the adaptation to international norms on air emissions might discourage producers from complying.

5.6 Miscellaneous

- There is a lack of consistency in the terms used (effluents, pollutants, emissions...). ‘Pollutants’ seem the best term.

- Traders and transporters must be added in the ‘responsibilities’.
- In addition to the ban on open burning of wastes, the guidance (or good practices) should encourage the use of wastes to produce energy.
- Regarding open burning, gradual improvement must be encouraged, instead of a simple ban on this practice. Some participant mentions that in this precise case, “should” could be used instead of “shall”. A time frame for the elimination of open burning could be taken.
- ‘odours’ is preferred to ‘olfactory nuisances’ (10f).
- The optimisation of transports and distances should be mentioned in the good practices.

10. Biofuel production shall seek to minimize its contribution to air pollution / Biofuel production shall seek to minimize its impact on air quality		
Criterion	Responsibilities	Guidance for Implementation
10a An assessment of potential air pollution sources must be performed, appropriate to the scale and intensity of production.	Biomass producers and processors	Major air pollution sources must be identified along the production chain. A monitoring system appropriate to the scale and intensity of production must be in place regarding major air pollutants such as carbon oxides, nitrogen oxides, volatile organic compounds, particulate matter, sulphur compounds, dioxins and any other compound recognised as potentially harmful for the environment or human health.
10b The use of agrochemicals shall neither affect the ecosystems surrounding the production site nor human populations	Biomass producers	Farmers must comply with the FAO’s Guidelines on Good Practice for Ground ¹ and Aerial ² Application of Pesticides. Any agrochemical used in biofuel production must be used in accordance with the fabricant’s safety instructions.
10c Air pollution from biomass processing units must be minimised	Processors	Biomass processing units must comply with any existing national standards on industrial aerial pollutants. The air pollution from biomass processing units must be minimised.
10d Air pollution from machines used along biofuel value chain must be minimised.	Biomass producers and processors	All the machines used for agricultural practices, biomass processing and transport must comply with national norms on air pollutants.
10e Open burning should be avoided throughout biofuel production.	Biomass producers and processors	Open burning of plants, leaves, straws and other agricultural residues must be minimised, with the aim of ultimately eliminate burning practices. In specific situations such as those described in the ASEAN guideline or in case workers’ health and safety is at stake, limited field burning practices may occur. Open-air burning of wastes must not occur. The burning of wastes must only occur in an appropriate incinerator.
10f Odours must be minimised	Biomass producers and processors	Mitigation measures must be taken where possible whenever local population may report odours in the areas surrounding biofuel production sites.

¹ <http://www.fao.org/ag/AGP/AGPP/Pesticid/Code/Download/Ground01.pdf>

² <http://www.fao.org/ag/AGP/AGPP/Pesticid/Code/Download/Aereal01.pdf>

6. Principle and Criteria on Water

6.1 Principle

After the decision to merge the principle on water rights with the principle on environmental aspects of water, the Secretariat made the following proposition:

Biofuel production shall not directly or indirectly contaminate or deplete water resources, nor impact on existing water rights both customary and formal.

Comments and decision

- The Working Group considers that indirect effects on water resources can be due to market mediated effects or to the concentration of farmers on an area with a restricted watershed or the concentration of processing units (needs of workers, sewage, etc). The Working Group agrees to keep ‘directly or indirectly’
- The term ‘impact’ is inappropriate. **Suggestion from the SOC WG: ‘violate’.**

6.2 Criteria

Comments and decisions:

- The idea of a calculation of total water consumption per amount of biofuel produced seems complicated to implement, especially because it would be difficult for each stakeholder to figure its contribution. Even with a given amount, the sustainability of water consumption will vary from a region to another.
- Some participants consider there is no point in discussing quantity; we should rather encourage improvements at each step through good practices.
- Here again, the notion of continuous improvement is supported by the Working Group. ‘Seeking the most efficient use of water’ should be inserted at some point. **Proposition: insert the sentence in 9c (guidance).**
- The criterion 9b is removed and the part on water rights is moved to the guidance of criterion 9a.
- The assessment of water availability and share of water rights will be delegated to local water committees.
- Rain is not considered here; the focus is on the water consumed out of rainfalls.
- One participant suggests ‘no irrigated lands for biofuel production’ but there is no consensus on this proposition. However, the suggestion **‘water intensive biofuel crops and biofuel production systems must not be established in water stressed areas’.**
- Some elements in 9d – guidance are redundant with other P&C (e.g. buffer zones).
- In 9c (guidance), ‘Water strategy must be defined’ is added, but appropriate to the scale and intensity of production.
- We must be straight and precise regarding good practices and water management
- Criterion 9c is not consistent with other environmental aspects where no management plan is needed. **The whole set of Principles and Criteria will be homogenised during the second phase in order to have a consistency in the content and the language.**
- Generally speaking, there is too much detail in the guidance, whereas general points only should be mentioned, details being set locally. Some participants, however, are in favour of keeping all the details as such, in order for producers to know exactly what is expected from them.

- "The use and share of water resources for biofuel production (...) defined in agreement with local community" is ideal, but how do we do it in practice, especially where there are a large number of other users (large catchment, city, unorganized local stakeholders...)?

- One participant recommends to add the promotion of water decontamination through the use of oil crops residues (e.g. Moringa) which can naturally make contaminated water drinkable without using chemicals.

- Key ecological organisms (9d – guidance) should be locally determined

8. Biofuel production shall not directly or indirectly contaminate or deplete water resources, nor violate existing water rights, both customary and formal.		
Criterion	Responsibilities	Guidance for Implementation
9a the ESIA shall identify existing water rights, both formal and customary and determine potential impacts of the project on water availability in the area surrounding the project		In particular, downstream water users or users of ground water in the area must be identified and included in the ESIA process as key stakeholders Existing formal and customary water rights must be documented and respected. No modification of these rights can happen without the consent of the parties at stake.
9b Biofuel production must include a water management plan appropriate to the scale and intensity of production.	Farmers and processors	A water conservation strategy must be developed appropriate to the scale and intensity of production. Water sources located on the production areas must be inventoried and mapped. Annual amounts of water specifically withdrawn from each source for biofuel production must be recorded.
9c Biofuel production must not deplete water resources.	Farmers and processors	The use and share of water resources for biofuel production must be defined in agreement with local community Water user committees should be utilised and consulted where appropriate. Continuous reductions in amount of water per unit must be sought. Water for irrigation or biomass processing must not be withdrawn beyond replenishment capacity. Local climatic, seasonal, soil and hydro-geologic conditions must be taken into consideration in the development of irrigation or drainage systems. Water intensive biofuel crops and biofuel production systems must not be established in water stressed areas. The most efficient use of water, including rainfalls, must be sought in accordance with available guidelines and financial possibilities of farmers and processors. The use of surface or ground water for biofuel production must not compete or be at the expense of daily basic water needs of local communities.
9d The quality of water resources must be enhanced to their optimal level under local conditions.	Farmers, processors, authorities	Adequate precautions must be taken to avoid contamination of surface and ground water resources at every step of biofuel production. Buffer zones must be set between areas where chemicals are used and surrounding surface or ground water resources. The optimal quality of water is determined by local experts. Water management practices must aim to continuously improve the quality of local water resources until an optimal

		<p>level is reached.</p> <p>Waste water must be adequately managed and treated before being released outside the farm or processing unit.</p> <p>The quality of water is assessed, including DBO_{5, 20}, DCO, total suspended solids, pH, concentration of grease and oil and the presence of fecal coliforms.</p> <p>If chemicals are used during production, the presence of associated metallic or organic compounds in local surface and ground water must be measured.</p> <p>The presence of key ecological organisms (to be determined locally) shall be regularly controlled by competent authorities.</p>
--	--	---