



## Global Assessment of Biomass and Bioproduct Impacts on Socio-economics and Sustainability

[www.globalbiopact.eu](http://www.globalbiopact.eu)



The Global-Bio-Pact consortium visiting soy production and processing facilities in the Santa Fe province in Argentina, on the occasion of the 6<sup>th</sup> Progress Meeting in Buenos Aires, Argentina

### Global-Bio-Pact meeting, workshop and site visit to the soy production complex in Argentina

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The Global-Bio-Pact consortium has met on 17-20 September 2012 in Buenos Aires to discuss about the progress of the Global-Bio-Pact project.

Special focus of the internal meeting was placed on the Global-Bio-Pact Set of Socio-Economic Impact Indicators. This set presents a source of information for policy makers and stakeholders involved in the certification process of sustainability of biofuels. The final report is available at the Global-Bio-Pact website. Another topic was the formulation of recommendations on how to consider socio-economic impacts of biofuels and bioproducts in policy frameworks. Finally, the consortium discussed the upcoming edited book on “Socio-economic Impacts

of Bioenergy Production” as a major outcome of the project. The book will be published in 2013.

In conjunction with the internal project meeting, a stakeholder workshop was organised on 19 September 2012 by the Instituto Nacional de Tecnología Agropecuaria (INTA). More than 100 participants took the opportunity to discuss in the workshop various aspects of sustainability in the bioenergy value chains.

Finally, INTA organised a study tour to the soy production and processing facilities in the Santa Fe province on 20 September 2012.

Participants visited the typical soybean farm San Niclas in Uranga ([http://www.agrouanga.com/eng\\_estancia\\_san\\_nicolas.php](http://www.agrouanga.com/eng_estancia_san_nicolas.php)). Experts from the farm, as well as from INTA and the Argentine No Till Farmers Association (AAPRESID) explained modern agricultural practices such as precision farming.

The next stop was at the biodiesel and glycerine production complex of Unitec Bio (<http://www.unitecbio.com/>). Participants had the opportunity to discuss the impacts of current biofuel policies in Argentina on the operation and economy of a biodiesel plant.

Finally, the participants concluded the study tour by visiting the Dreyfus soybean complex in Lagos (<http://www.louisdreyfus.com/index.html>). Core of the visit at Dreyfus was the logistics of soybean, including storage and preparation for export. A biodiesel plant of Dreyfus was visited as well.



Unloading soybean from trucks at Dreyfus in Lagos



Workshop participants in Buenos Aires, Argentina



Harbour facilities for loading soybean into ships at the Paraná River at Dreyfus in Lagos

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## Linkage of environmental and socio-economic impacts

By Nils Rettenmaier, ifeu – Institut für Energie- und Umweltforschung Heidelberg GmbH (IFEU), Germany

The aim of work package 5 within the Global-Bio-Pact project was to reveal hotspots of trade-offs and correlations between socio-economic and environmental impacts of biomass production in developing countries. Based upon the assessment of existing studies, the linkages between major environmental and socio-economic impacts of biofuel and bioproduct life cycles were investigated. This is important since positive social impacts are not necessarily associated with positive environmental impacts, and vice versa.

The general linkage between environmental and socio-economic aspects is quite obvious: “the environment” actually means soil- to grow food, water- to drink, wash and irrigate crops, air to breathe, and a host of natural food and medicinal products. It becomes clear that preserving “the environment”

actually means safeguarding food production, sustaining livelihoods, and preserving health (OECD 2001). This linkage is best expressed in the “ecosystem services” approach. Ecosystem services are the benefits people obtain from ecosystems. These include provisioning, regulating, and cultural services that directly affect people and supporting services, needed to maintain the other services. Changes in these services affect human well-being through impacts on security, the necessary material for a good life, health, and social and cultural relations (Millenium Ecosystem Assessment 2003).

A SWOT analysis (strengths, weaknesses, opportunities, threats) was performed on each Global-Bio-Pact case study. This way, differences in the biomass production and conversion into biofuels and bio-products are revealed, depending on spe-

cific environmental, social and economic conditions.

Regarding the identification of linkages between socio-economic and environmental impacts the following classification was applied:

	Positive correlation	Trade-off
Environmental impacts	+	-
Socio-economic impacts	+	+
Environmental impacts	+	-
Socio-economic impacts	-	-
	Trade-off	Negative correlation

Through the SWOT analyses on the Global-Bio-Pact case studies, all types of linkages could be identified: positive correlations, trade-offs, as well as negative correlations (Rettenmaier et al. 2012). The following conclusions were made.

- Trade-offs and negative correlations are a sign of deteriorations of ecosystem services which negatively affect the constituents of human well-being. They are often related to inappropriate management practices during feedstock production and conversion which either reflect the absence of respective regulations or at least a weak law enforcement by the country's institutions. Sustainability certification could help here, at least by raising awareness.
- The second cause for trade-offs and negative correlations is land use conflicts and land-use change. For direct land-use change (dLUC), the same applies as for inappropriate management practices (see above). However, certification

does not help resolving the issue of indirect land-use change (iLUC).

- The impacts associated with the production of a feedstock are fairly independent of its use, i.e. whether the feedstock is used for biofuels / bio-products or for other purposes. Therefore, most of the conclusions drawn are applicable for the general cultivation of the respective feedstock. They do not necessarily reflect the specific impact of the biofuel production as such. Therefore it is important to apply the same rules for all agricultural products irrespective of their use for food, feed, fibre or fuel.
- Most of the linkages can be detected at local level whereas some linkages can only be detected at country level (or even higher), e.g. impacts on food security. Furthermore, some of the linkages regarding food security will need additional studies and a different methodology to be able to fully demonstrate that biofuel production may cause food insecurity and in how far biofuel mandates in developed countries and / or globally rising energy prices contribute to that.

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*OECD, 2001 Poverty-Environment-Gender Linkages. Pre-print of the DAC Journal 2001, Volume 2, No. 4*

*Rettenmaier N., Schorb A., Hienz G., Diaz-Chavez R.A., 2012 Report on Show Cases and linkage of environmental impacts to socio-economic impacts. D5.3 within the Global-Bio-Pact project.*

## Recommendations on how to harmonise sustainability certification for biofuels and bio-products

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In the framework of different sustainability certification initiatives, there has been a surge to consider their harmonisation in order to facilitate their international applicability and monitoring activities. Thus, the Global-Bio-Pact project reviewed the various ways through which harmonisation of sustainability certification among different continents, countries, and stakeholders could be possible. A number of case studies, reports on environmental and socio-economic issues from available standards as well as the results of the "Global-Bio-Pact Set of Impact Indicators" (Diaz-Chavez et al. 2012) that has been tested in the field, were reviewed in order to com-

pare them with the standards of the global "Roundtable on Sustainable Biofuels", other existing sustainability certification schemes, and the EU legislation requirements.

The report "Recommendations on how to harmonise sustainability certification for biofuels and bio-products" presents this analysis and provides some recommendations for this harmonisation. It is available at the Global-Bio-Pact website.

## Harmonization and Differentiation: finding the right balance

The report shows that many differences exist among EU-recognized voluntary standards and general sustainability standards. These differences are found in the comprehensiveness of sustainability-related requirements, the robustness of implementation (indicators, evidences/verifiers, etc.), the types of Chain of Custody models offered and the quality of assurance systems.

The complexity and comprehensiveness of voluntary standards is generally correlated with the costs for compliance and certification (NL Agency, 2012). Therefore, voluntary standards may give the priority to their economic competitiveness by keeping the exigencies related to sustainability, chain of custody and assurance to the legal minimum. As a consequence, standards with higher levels of robustness and stringencies will generally be seen by users as more cumbersome and complex, but will in turn receive more support from Non-Governmental and Civil Society Organisations (WWF, 2012).

It is important to realize that differences between voluntary standards are generally causing no problems and markets will function more efficiently with a broad range of offers regarding certification systems. However, some degree of harmonisation is needed to ensure that all voluntary standards used in the European Union meet the minimum quality level. The two following sections respectively describe the aspects for which harmonisation is needed and those for which a differentiated offer is beneficial to the users.

### Harmonisation

As described in the previous chapters, the level of robustness of a certification scheme can decrease significantly according to the options taken in terms of implementation. This is particularly true for verification systems, chain of custody and assurance. Lin (2010, p. 9) highlights the positive effect a meta-standard, like the Renewable Energy Directive, could have as a benchmarking and consolidation tool for voluntary standards.

Therefore, **a better harmonisation of chain of custody systems and assurance among recognised standards is recommended.** Currently, the level of scrutiny over these aspects during the process of recognition of voluntary standards appears to be low. As a consequence, there is a serious risk that some biofuels certified by EU-recognised schemes do not bring sufficient guarantees with regards to sustainability for various reasons including weaknesses in chain of custody and assurance (WWF, 2012).

The following list suggests improvements in the current EU legislation, in order to raise the overall level of robustness and quality of recognised standards:

- **Proofs of Compliance:** The different types of verifiers/evidences shall be carefully evaluated by EU authorities to select those which offer the highest level of guarantee in a given context. Examples: internal records, maps, interviews of employees, interviews of stakeholders, applicable laws, etc.
- **Chain of Custody:** Additional guidance is needed from EU authorities on how to design and implement mass balance systems in accordance with the Renewable Energy Directive. In addition, EU shall evaluate the likelihood of frauds due to the fact that many systems only start the chain of custody at the first gathering point in comparison to systems starting chain of custody at the level of farms. Finally, the sampling patterns in case of group certification shall be in line with ISEAL Assurance Code (ISEAL, 2012).
- **Assurance:** Assurance systems are critical to the proper implementation of standards and certification systems. The Assurance Code developed by the ISEAL Alliance (ISEAL, 2012) defines good practices to ensure an appropriate level of robustness on various aspects of the implementation systems of standards while preserving their workability and operability.
- **Standard Development:** The process whereby a standard is developed and implemented is essential to ensure participation, representativeness and legitimacy. Multi-stakeholder standard-setting processes are generally recognized as the most credible. The EU shall recognize the importance of multi-stakeholder processes through a closer partnership with the ISEAL Alliance and by using elements of ISEAL Codes of Conduct (ISEAL 2010a) to grant voluntary standards recognition under the Renewable Energy Directive.
- **Monitoring and Evaluation:** As described in in the Global-Bio-Pact report by Haye et al. (2012), monitoring and evaluation (M&E) systems shall form part of the minimum requirements for any voluntary standards recognized by the EU in order to demonstrate the impact over time on bio-fuel and bioenergy supply chains. The development of such M&E systems shall be conducted in line with the ISEAL Impact Code (ISEAL, 2010b).

Dam and Junginger (2011) state that harmonization is also recommended in order to “avoid proliferation of schemes, methodologies and approaches” and that a “meta-standard approach, in combination with using international agreements, could partly

solve proliferation and priority differences of standards.” Dam and Junginger also stress the significance of better using existing certifications schemes and standards “for further improvement of the harmonization of a biomass and bioenergy sustainability certification system on European level.”

The possibility of integrating different sustainability goals is a challenge that is difficult to approach and to put in practice (Diaz-Chavez 2011b). It is also necessary to integrate the different stakeholders (e.g. farmers, producers, companies and communities), but difficult to harmonise their different interests.

### Differentiation

While harmonisation is required on the essential elements of certification systems, it is not necessarily the case for other elements, such as the types of environmental or socio-economic impacts that standards try to address. The different standards were created with different aims and different scopes, thus providing the industry with a wide range of options. This diversity of options is important as all companies may have different needs in terms of:

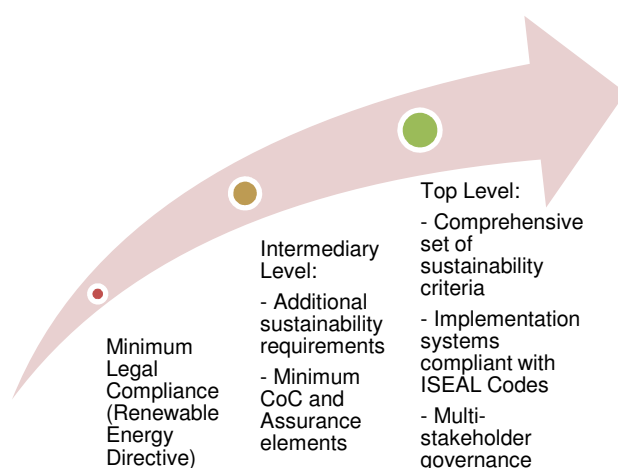
- Particularities of supply chains in terms of risks to the environment and people
- Legal compliance
- Corporate Social Responsibility
- Communication and Marketing
- Consumers

The diversity of standards is well illustrated through the membership of the ISEAL Alliance, which includes schemes with mainly social requirements (e.g. Social Accountability International, Fairtrade Label Organisations, Goodweave), schemes with mainly environmental requirements (e.g. Marine Stewardship Council) and standards, which cover both environmental and social aspects at different stages of the supply chain (e.g. Forest Stewardship Council, Roundtable on Sustainable Biofuels, Rainforest Alliance). Interestingly, the criteria to become an ISEAL Member are not prescriptive regarding the scope of a standard (i.e. how comprehensive it is with regards to social and environmental issues). They are, however, prescriptive regarding assurance systems and standard-setting processes (ISEAL, 2010a).

Therefore, harmonisation in terms of sustainability content is **not recommended for standards used to verify or certify biomass, bioenergy and bio-fuel supply chains**. In the current situation, biofuel companies have different needs and different means to comply with standards and receive certifications. Some of them may only afford to comply with the legal minima, while other may develop a

more advanced Corporate Social Responsibility (CSR) strategy and look for standards which comprehensively address environmental and socio-economic issues.

An important element to promote is continuous improvement of companies towards sustainable practices, but this goal needs to be made accessible to all companies at their respective pace. Of equal importance is the mutual recognition of voluntary standards in order to create bridges across the different certification systems and further enhance opportunities for users. Mutual recognition shall be based on a sound and transparent benchmarking process, whereby gaps between standards are identified. Operators certified against standard A could therefore obtain certification against standard B through a simplified audit process, which corresponds to the gaps identified between standards A and B. The path across different certification systems could be described as a sustainability ladder towards excellence.



Sustainability ladder towards best practices

An integrated policy approach should provide the way forward for the use of the different environmental and political tools. Furthermore, enforcement in each country is an additional challenge that even the verification systems will not be able to solve. Nevertheless, market based schemes can potentially ensure a different type of enforcement mechanism than legislative schemes and may be more powerful as a mechanism in countries with poor ability to enforce policy. However they are only applicable if the market demands the certification (Diaz-Chavez, 2011b).

### Conclusion and Recommendations

As Diaz-Chavez (2011b) stated, whilst assurance (the development of standards) and certification cannot ensure the provision of sustainable supplies of biofuels, they will play a major role in developing

the framework for sustainable agriculture and forestry and extend it to a more sustainable biofuel production. Therefore, the way forward is to use these tools to help reconcile the inherent trade-offs between the different demands for photosynthetic products and to increase the efficiencies of production and supply.

Harmonisation of the different available standards and schemes (recognised and non-recognised by the EU) for biofuels will be a difficult task to conduct at a European and global level. Furthermore, there is not strict need to do so, even with a meta-standard. In the case of Europe the political and regulatory frameworks are in some way providing the bases for the criteria and indicators considered necessary to assure a sustainable biofuel production.

One of the main concerns with the standards is whether they generate barriers for trade and result in discrimination. The World Trade Organisation (WTO) is still unclear in terms of the possible barriers to trade.

Biomass for biofuels and bioenergy use cannot be the only productive system in a region or country to contribute to sustainable development and poverty reduction. Issues such as indirect land use change impacts (ILUC) and sustainable verification systems should be applied to other commodities as well specially in countries where this debate is on-going.

### **Excerpt from the report:**

Dörnbrack A.S., Haye S., Diaz-Chavez R. RutzD., Janssen R. (2012) *Recommendations on how to harmonise sustainability certification for biofuels and bioproducts*

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## **Recommendations on using audit procedures and tools for achieving sustainability within biomass certification schemes**

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As part of the Global-Bio-Pact project, the report on “Recommendations on using audit procedures and tools for achieving sustainability within biomass certification scheme” (1) shows how the audit process can be used to support impact assessment programmes within sustainability schemes, and (2) presents practical tools that could be used by local governments, donors, and project managers to identify, measure, and mitigate potential socio-economic impacts and ensure that sustainability is being achieved. This information can then be applied and adapted to the requirements of audits in the framework of the new European Renewable Energies Directive.

The role of sustainability standards has now become firmly established at an international level – the recognition by the European Commission that several schemes have compliance with the Renewable Energy Directive such as International Sustainability and Carbon Certification (ISCC), Roundtable on Responsible Soy Association (RTRS), Bonsucro and Greenergy is an example of progress in this area. However, with this recognition there has come increasing demand and realisation, both from civil society and the schemes themselves, that this needs to be supported by action from the sustainability schemes to demonstrate that the positive social, economic and environmental ambitions

of the scheme are being delivered.

While the demonstration of social and environmental benefits are key to maintaining the credibility of a certification scheme and their purpose, the issue of how these benefits can be monitored, reported and evaluated in a way that is consistent, accurate and efficient, is critical. Sustainability schemes and best practice organisations such as ISEAL are increasingly looking for effective methods to improve the monitoring and evaluation processes. This can be complicated, with data collection often being time-consuming and costly, and different types of data (i.e. qualitative and quantitative) requiring different approaches. However, one potential method of data collection that has until now been overlooked by many certification schemes is the audit process itself. The audit process presents considerable opportunity in this area, being a compulsory part of most standards with an existing process that could be adapted at a relatively minor scale to effectively report impact information data that can be used by the scheme as well as the operation level.

Using the audit process as a form of collecting impact information data presents a valuable opportunity for sustainability schemes to build on existing procedures. While the audit process can only be one part of a larger impact data collection process, implemented by the scheme as part of the impact assessment programme, it represents a large potential source of information that is available to the scheme and needs to be recognised as a part of this programme.

Tools presented in the second part of this report include: impact assessment tools, guidelines and online tools, monitoring and management plans, manuals on good practices, and capacity building and trainings. Each of these comes with pros and cons. However, their value comes in their complementarity and the variety of use one can make out of these, with regards to a specific situation or context. Biomass, bioenergy and biofuel operations may vary greatly in terms of size, location, production pattern, legal framework, etc. Therefore, it is

important for operators to be able to use the most appropriate tool in each specific context. These tools can then become more widely adapted and implemented in international policies and standards.

It is likely that existing schemes will need to introduce changes gradually, starting with changes to the audit process requirements and possibly later introducing changes to the standard itself. These changes could range from relatively minor adaptations, such as clarifications or specifications, to larger-scale, such as introducing new impact indicators to be reported on.

Adaptations in this area could also bring other general benefits to the scheme, including greater clarity for both the operation and the auditor on what information is required and how it should be reported.

Ultimately, the application of this information will facilitate the implementation of socio-economic criteria in the European Renewable Energy Policy.

*The authors would like to thank ISEAL for their contributions to this report.*

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## **Global-Bio-Pact set of socio-economic indicators and field testing**

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The Global-Bio-Pact set of selected socioeconomic impact indicators was elaborated with the input from various reports of the Global-Bio-Pact project during

the last three years. Input was gained from the Global-bio-Pact case studies, as well as from dedicated reports on the link between socio-economic

and environmental impacts, as well as on existing socio-economic principles, criteria and indicators. All reports are available at the Global-Bio-Pact website.

This set includes criteria and indicators for both, biomass production and conversion chains in order to cover the whole biomass/biofuel/bio-product life cycle. It shows opportunities and limitations of the inclusion of socio-economic criteria in a European or international certification scheme, especially with respect to some opportunities for small and large companies and with respect to international trade.

### Indicators development and use

Indicators and indices are useful for monitoring and examining trends and changes in a particular process. International and national institutions (e.g. GBEP, 2011; OECD, 2000a, b; UN, 2007) have been using indicators to assess the regional and national performance and development on a number of dimensions, such as income, education, health and welfare (Diaz-Chavez, 2006).

Social impacts tend to be more difficult to monitor and quantify as they require more in-depth studies, such as household surveys, which are time consuming and expensive. Therefore, the implementation of standards might provide an effective link between organisations that are already monitoring impacts and certifying activities. Nevertheless, a key difficulty is that the monitoring refers more to compliance than to the actual impacts.

A further issue is the need to consider the interactions between the environmental and socio-economic indicators when examining impacts (for instance, the link between the use of water for the feedstock production and the use of water by the community).

International and national institutions have been using indicators to assess the regional and national performance and development: income, education, health and welfare. Some examples include demographic indicators (e.g. born rate, demographic increase rate, child mortality rate) and well known indices (Human Development Index, Gross Domestic Product, Gini Index).

No universal set of indicators exists which would be equally applicable in all cases (Segnestam, 1999). The value of an indicator relies on the quality of the data it contains. Therefore, the indicator must be carefully selected. The selection must be based on sound criteria and not on subjective appeal. Even though some factors such as availability of information, or human and economic resources for collecting data may influence the selection.

### Global-Bio-Pact Indicators

Indicators are needed to describe the social-environment interface, and to address issues of social sustainability. It is also recognised that there is still a gap between the demand for sustainable development indicators, the measurability of underlying data sets and the actual use of such indicators (Diaz-Chavez, 2011).

The general methodology used to select the indicators included the following steps:

- Benchmarking of standards for environmental and social indicators
- Identification of impacts mentioned in selected Global-Bio-Pact case studies
- Identification of socio-economic impacts in supply chains
- Links between environmental and social impacts
- Pre-selection of criteria and indicators
- Workshop with Global-Bio-Pact partners in London on 15-17 February 2012
- Final selection of indicators
- Field test in Brazil and Argentina

The set of indicators is available at the Global-Bio-Pact website. It shall provide a tool:

- to initiate or assess a bioenergy proposal or project
- to assess the sustainability of a feasibility report for a bioenergy proposal or project
- to monitor impacts at the local and regional level
- to be used in addition to a standard

Each indicator is linked to a measurement, monitoring process or unit, depending of its nature. For instance, the "Average yield of the feedstock" is measured in t/ha/yr. The set includes furthermore guidance on how to measure or monitor the indicator. In addition, is indicated from where the data could be accessed:

- Processing company or plantation (P)
- Government (G)
- Community (C)
- Non-Governmental Organisation (N)
- Worker (W)

The set of indicators may differ under different frameworks, projects, experts, countries or any other stakeholder's opinion.

Four characteristics were selected to assess the effectiveness of the indicators:



- **Measurability** – can the data be measured?
- **Easiness** to gather the data – how easy and cost-effective is to gather the data for the indicator?
- **Usefulness** for assessing socio-economic impacts – do they really represent the assessment of the impact?
- **Temporality** – how long is the indicator valid and on which reference dates is it based?

### Field testing

The indicators were field-tested in two companies in Argentina and Brazil. The field tests were implemented in June/September 2012 in cooperation with the local Global-Bio-Pact partners Proforest, INTA and UNICAMP. Results of this field tests are described in a report on “*Audit report on testing the Global-Bio-Pact set of socio-economic sustainability criteria*” which is available at the Global-Bio-Pact website.

In the field assessments, the data from each operation was collected in four ways:

- A questionnaire was sent to the operations prior to the field visit. The questionnaire included different aspects related to the indicators. Staff in charge of different areas of the operation filled in the questionnaire and sent it to the assessment team.
- A visit to the operations was carried out. During this visit, the assessment team completed the information sent by the operation via interviews with staff in charge of different areas of the operation (e.g. agricultural manager, human resources, quality manager).
- Fields, offices and processing facilities of the company were visited and questionnaires were applied to employees of the operations.
- Questionnaires were made to outgrowers and contractor companies of the operations, where possible. In some cases other stakeholders such as representatives of government or associations were also interviewed.
- Communities located in the vicinity of the operations were visited and community surveys were carried out.

The results of the field testing can be found in the report “Test auditing of the Global-Bio-Pact socio-economic sustainability criteria and indicators” on the project’s website.

The two field tests provided a significant amount of information on the practical application of the Global-Bio-Pact set of socioeconomic indicators and allowed for an assessment of the indicators using the pre-defined criteria.

The assessment of the indicators showed that most of the indicators were clear and easily understandable for the respondents. Some of the indicators could, however, be further refined to make it clear what information is being requested.

The combination of company interviews with employee, community and outgrower questionnaires was considered to be a good method for collecting the information necessary for the monitoring of the indicators.

In the practical applications of the indicators it may not always be possible to use as much time and resources for field assessments as it were employed in these two field tests (3 days with three assessors). An overall recommendation on the application of the indicators is that this should be a joint effort of local authorities and the company. This will help to have a better use of economic, time and human resources.

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## Drivers of biofuels and food crops production in Argentina

By Jorge A. Hilbert, INTA, Argentina

Several forecast studies have been developed in recent years regarding the possible impacts of biofuels expansion in the world. Most of them do not take into account the enormous importance of national, regional and international policies regarding agricultural products. The last year has been an extreme example for the principal biodiesel exporter to Europe and one of the main producers of biodiesel in the world, namely Argentina.

Regarding international trade, Spain announced severe restrictions on Argentinean soybean-oil biodiesel that brought the first big change in expectations to the market. More recently, new announcements of the European Union regarding changes in the general policy brought another bad signal. At the end of 2012 new contracts decreased thus changing all predictions and forecasts that were made.

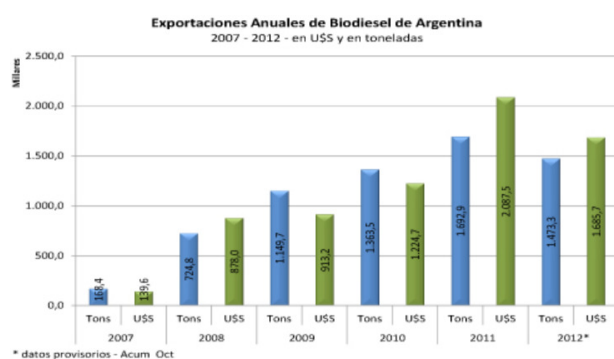
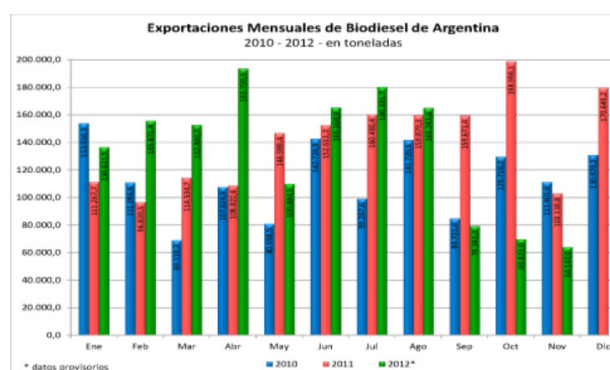
This was accompanied with important changes of internal agricultural policies in Argentina with an increase in the export tax for biodiesel from 14 to 24% with a final agreement of 19% variability according to international prices, together with an initial decrease of 20% in the agreed price for the mandatory blend in the internal market. Finally the market was divided between different factories sizes: less than 20,000 t 5,333 AR\$/ton those from 20,000 to 100,000 t 5,182 AR\$/ton and the bigger ones with a capacity over 100,000 t 4,565 AR\$/ton. This latest political decision also brought an important impact in the final viability of the business in different regions of the country.

At the same time, important actions were made regarding the adoption and approval of different certification schemes with RSB (Roundtable for Sustainable Biofuels), RTRS (Roundtable for Responsible Soybean), 2BSvs (Biomass Biofuels Voluntary Scheme) and ISCC (International Sustainability and Carbon Certification) being the mostly used.

All these factors severely affected the industry and changed drastically the predictions of exports and production. At the same time, no drastic changes were detected on land use or on the overall agricul-

tural or soybean system behavior. This is a clear example that changes in policies are stronger and have significant effects on this type of products that are politically promoted in different parts of the world and that biofuels do not constitute a key factor regarding changes in agricultural decisions.

The important differences in biofuels production did not affected the agricultural production, hectares being produced, or the soybean surface since there are other complex factors and products much stronger that give the final signal to farmers and producers. This is also a very good example of the risks of making links between biofuels production and crop coverage or expansion, especially when we are dealing with food rather than energy crops.



Source: CARBIO  
[http://www.carbio.com.ar/es/?con=bio\\_estadisticas](http://www.carbio.com.ar/es/?con=bio_estadisticas)

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## Sweet Sorghum as Energy Crop: A SWOT Analysis

By Dominik Rutz and Rainer Janssen, WIP Renewable Energies, Germany

The energy crop sweet sorghum (*Sorghum bicolor* L. Moench) is raising considerable interest as a source of either fermentable free sugars or lignocellulosic feedstock with the potential to produce fuel, food, feed and a variety of other products. Sweet sorghum is a C<sub>4</sub> plant with many potential advantages, including high water, nitrogen and radiation use efficiency, broad agro-ecological adaptation as well as a rich genetic diversity for useful traits. For developing countries sweet sorghum provides opportunities for the simultaneous production of food and bioenergy (e.g. bio-ethanol), thereby contributing to improved food security as well as increased access to affordable and renewable energy sources (Rao et al. 2009). In temperate and usually more industrialised regions (e.g. in Europe) sweet sorghum is seen as promising crop for the production of raw material for 2<sup>nd</sup> generation bio-ethanol.

The project SWEETFUEL (Sweet Sorghum: An alternative energy crop) is supported by the European Commission in the 7th Framework Programme to exploit the advantages of sweet sorghum as potential energy crop for bio-ethanol production (Braconnier et al. 2011b). Thereby, the main objective of SWEETFUEL is to optimize yields in temperate and semi-arid regions by genetic enhancement and the improvement of cultural and harvest practices.

In order to get an overview of advantages and disadvantages of different sweet sorghum and biomass sorghum value chains a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was conducted in the framework of the project. Thereby, the analysis investigated several sweet sorghum value chains under different framework conditions: subtropical, tropical and temperate climate. The value chains include the cultivation of sweet sorghum, conversion to different products and end use of the products. More details on sweet sorghum value chains and on scenarios for the sweet sorghum products are described in the report "Handout for the Workshop on Definitions and Settings" (Braconnier et al. 2011a).

The objective was to collect and present qualitative arguments for the cultivation of sweet and biomass sorghum for the conversion into ethanol as energy carrier. This is important as current discussions on the sustainability of biofuel value chains mainly focus on environmental and quantifiable aspects.

The evaluation of socio-economic and qualitative impacts is generally more challenging (Rutz et al. 2011, Rutz & Janssen 2012a, Rutz & Janssen 2012b) and thus, a SWOT analysis is a good method to present a comprehensive picture of these aspects. Besides the illustration of sustainability aspects, also several qualitative technical aspects can be shown in a SWOT analysis (Rutz & Janssen 2007, Glekas et al. 2007). This was applied to the sorghum to energy value chain and presented in the report.

In total, more than 450 arguments have been collected and categorised into strengths, weaknesses, opportunities and threats. Thereby, a clear categorisation was not always possible and repetitions of similar arguments occur in some tables. The analysis can be further extended and completed with additional arguments.

The aim to show different qualitative aspects of sorghum cultivation and processing was successfully achieved. The report shows a very broad picture of many aspects associated with some key value chains of sorghum use for ethanol and other biofuels. This shall help stakeholders and decision makers building their own opinion about this topic.

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The report is available at: [www.sweetfuel-project.eu](http://www.sweetfuel-project.eu) or at [www.globalbiopact.eu](http://www.globalbiopact.eu)

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## Selected Events on Bioenergy and Bioproducts

### Upcoming: 6th Global-Bio-Pact Progress Meeting Brussels, Belgium

The next internal Global-Bio-Pact meeting will be organised on **28 January 2013** in Brussels, Belgium. The internal meeting will be hosted by Imperial College and WIP.

### Upcoming: FINAL INTERNATIONAL GLOBAL-BIO-PACT CONFERENCE “Socio-economic Impacts of Biofuels and Bio-products”

This International Conference on “Socio-economic Impacts of Biofuels and Bio-products” is organized as final event in the framework of the Global-Bio-Pact project. Specific objectives of the conference are:

- to present Global-Bio-Pact results to stakeholders involved in sustainability aspects of biofuels and bio-products including certification
- to provide a platform for knowledge exchange among international biomass stakeholders
- to discuss current and future European policies on sustainability of different biomass value chains

The conference includes presentations from high ranking international bioenergy experts, as well as panel discussions and round tables. The conference takes place on **29-30 January 2013** in the Crowne Plaza Brussels Hotel (Tuesday) and in the Renewable Energy House (Wednesday). The conference is organized by Imperial College, WIP Renewable Energies and the Global-Bio-Pact Consortium.

Registration forms are available at the *Global-Bio-Pact website*.

### Upcoming: Fuels of the Future 2013

The 10th Conference on Biofuels “Fuels of the Future” takes place at Berlin’s International Congress Centre on **21 and 22 January 2013**. Germany’s next federal election will be held in September 2013 and lead to new government constellations with a different political orientation. During this Conference representatives of the parliamentary groups are expected to give answers to some of the pressing questions on the future development of the biofuel market. This international conference will be held in English/German. Global-Bio-Pact will be presented at this conference.

More information: <http://event.bioenergie.de>

### Upcoming: 21st European Biomass Conference and Exhibition

The 21st European Biomass Conference and Exhibition (EU BC&E) takes place at the Bella Center - Copenhagen, Denmark on **3-7 June 2013** (Conference) and 3-6 June 2013 (Exhibition).

The conference provides a high-level scientific programme and parallel events which attract participants from a wide ranging background: researchers, engineers, technologists, standards organisations, financing institutions and further. Such a global platform of current knowledge in turn attracts industrial exhibitors, making the Conference events a significant tool for technology transfer and innovation.

This EU BC&E is supported by European and international organizations such as the EC, UNESCO, WCRE, EUBIA, and other organisations. The Technical Programme is coordinated by the European Commission, Joint Research Centre – JRC. Global-Bio-Pact will be presented at this conference.

More information: [www.conference-biomass.com/](http://www.conference-biomass.com/)

### Upcoming: Workshop on Sustainable Biomass Production in Southeast Africa

The workshop is organised by WIP Renewable Energies on behalf of NL Agency on **19-21 March 2013** in Maputo, Mozambique. The objective is to discuss and share experiences on current initiatives for the development of sound frameworks for bioenergy in African countries. Results of recent and on-going projects funded through the Global Sustainable Biomass Programme and the Sustainable Biomass Import Programme (the Netherlands Programmes for Sustainable Biomass – NPSB) as well as through the Daey Ouwens Fund (DOF) will be presented ([www.agentschapnl.nl/en/biomass](http://www.agentschapnl.nl/en/biomass)). Main workshop aims include:

- Sharing the knowledge and experience gathered in the pilot projects with other project developers in the region, but also with a wider public

- Sharing knowledge and experience with national governments on sustainable biofuel policies
- Exchanging knowledge and experiences with other (international) organisations and international round tables on sustainable biomass production
- Attracting new partners and investors for the follow-up of the projects

Participants are key stakeholders from Mozambique, Tanzania, South Africa, Kenya, Rwanda, Burundi, DRC, and other African countries, as well as from the international bioenergy community.

The workshop is free of charge. Details on the agenda, registration and venue are available soon.

More information: <http://www.agentschapnl.nl/en> or [www.wip-munich.de](http://www.wip-munich.de)

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## Other News

### Sustainable biomass in the chemicals sector

The Dutch Committee for Biomass Sustainability Issues (CDB) has sent an open letter to Mrs. Mansveld, Secretary of State for Infrastructure and the Environment, with advice regarding sustainable biomass in the chemicals sector.

In the letter, the committee states that it believes the use of biomass in the chemicals sector does contribute to sustainability. Using biomass in chemicals can, according to the advice, be more effective and efficient than co-firing in power plants. The letter also says that the 'smart' use of biomass in the chemicals industry not only replaces fossil fuels, but also saves on the energy required for processes. To encourage this, it says, it is necessary to better reward CO<sub>2</sub> reductions achieved through the use of biomass in the chemicals sector. The letter makes a number of recommendations for an integrated government policy focussed on CO<sub>2</sub> reductions. According to the committee there are a number of key issues involved in this, both at European and national level. Innovation in the chemicals industry should, in so far as possible, focus on the development of 'smart' routes.

The committee has called upon the Secretary of State to agree a clear sustainability regime with the sector. The nature and origin of the biomass must be clear, and the biomass must meet clear sustainability requirements. This can be linked with the

experiences already gained in ensuring the sustainability of biomass used in the transport sector, but further development of the certification systems is needed. The committee also recommends a reporting obligation on the part of the chemicals industry regarding the origin and sustainability of biomass. This will promote transparency.

The Committee for Biomass Sustainability Issues publishes advice on behalf of the Dutch Cabinet about various aspects of biomass sustainability. Since 2009 it has made recommendations on various subjects including renewable energy targets, agricultural issues, certification, solid biomass, and waste.

Source: <http://gave.novem.nl/gave/index.asp?id=25&detail=4380>

### Bioenergy in Africa – North-South Project finalized

The project “Bioenergy in Africa and Central America” (BIA) investigates the opportunities and risks related to the production and utilization of biofuels in East Africa and in Central America. Five European institutions cooperated with seven partners from Ethiopia, Kenya, Tanzania, Mexico and Belize. The focus was laid on “*Jatropha curcas*” because of its promise of high yields on degraded land.

The project was funded within the program “Agricultural Research for Development” of the European

Research Area. This program funds research that addresses the agricultural challenges and issues faced by developing countries, emerging countries and countries in transition. It thus plays a critical role in fighting poverty and hunger and in supporting more rapid and sustainable development in the poorest countries of the world.

A workshop held in Nairobi in November concluded the three years BIA project. Findings of the project on the feasibility of jatropha cultivation and its impact on energy security, climate change, land use and food security were presented. It was concluded that the road to implementation of bioenergy from jatropha in local, regional and global markets is still long.

Further Information: <http://www.bioenergyinafrica.net/>

### Can certification systems ensure sustainability?

Certification of biomass is one of the best strategies to guarantee sustainability and give confidence to consumers and public. Certification is already implemented for biofuels and bioliquids in the European Union through the Renewable Energy Directive (RED). Today we can say that companies that are able to comply with sustainability requirements will stay in the market; others will most likely not succeed. It is crucial for companies to learn what a standard for sustainability certification is, and how to select the certification system most suitable to their needs and sustainability goals.

Monitoring of results and comparative analysis are now needed to close regulatory gaps, and to add credibility to the European bet for sustainable biomass. Our sustainability team has worked throughout 2012 on these issues via 6 complementary projects, providing specialised advice mainly to policy makers.

All private certification systems differ considerably from each other. The legislation establishing the alternative EU national sustainability systems also differs significantly between Member States.

#### Main differences found in EU national sustainability systems

*Content:* Only RED mandatory requirements are considered

*Chain of custody:* Type of economic operator (producer/supplier) with a reporting obligation, and the amount and

#### Main differences found in private voluntary systems

*Content:* Some systems cover more than mandatory RED sustainability requirements. Socio-economic sustainability is required up to some extent by some systems

*Chain of custody:* Farmers are included in audits of all systems, although they may not be certificate holders

detail of information required differ per Member State (DE, NL, ES & UK require most exhaustive information).

*Mutual recognition:* Recognition of national sustainability system from other Member States is possible in most legislation, although these recognitions are not yet in place.

*Penalties and double counting:* Exceptions for small producers/suppliers, penalties from non-compliance and rules for eligibility for double counting differ per Member State.

*Level of assurance:* Systems show differences in issues like accreditation, sampling requirements, level of verification, stakeholder consultation, complaints procedures, transparency and recognition of other EU systems. For example, not all systems do field audits to farms; some accept self-declarations, others do desk audits

*Costs & benefits of certification:* Cost structure of system influences total certification costs; indirect costs for meeting requirements can be significant; producers & traders receive most external benefits (improved market access); farmers receive most internal benefits (efficiency & management improvements)

National systems are difficult to apply for economic activities performed outside the geographic borders of a State. Companies already show preference for voluntary certification systems because of their larger coverage and flexibility. Voluntary systems are of easier applicability in an international context and are applicable to other-biomass feedstock uses such as the food industry. The key question is whether voluntary systems can sufficiently ensure sustainability. This is especially important when considering that countries of feedstock origin have different sustainability risk contexts.

#### Lessons learnt about sustainability certification

<b>Use of certification schemes</b>	Current use of certification schemes stems mainly from low risk countries, such as Germany in Europe and Canada and the US outside Europe. Certification is also used in higher risk countries, such as Indonesia or Guatemala but with much less number of certificates issued until now.
<b>RED sustainability assurance</b>	Existing certification systems grant adequate assurance of sustainability in low risk countries, while this is not necessarily the case for high risk countries. In general, multi stakeholders' schemes offer higher assurance of sustainability for their application in countries with higher risk.
<b>Socio-economic sustainability</b>	Assurance on socio-economic sustainability (such as land use rights, wages and working conditions, and availability of foodstuffs) is often missing or fully excluded for biofuels entering the EU market. This is a large sustainability threat for feedstock with origin in high risk countries.

Source: Jinke van Dam & Sergio Ugarte  
([s.ugarte@sqconsult.com](mailto:s.ugarte@sqconsult.com)) at  
[http://www.sqconsult.com/content/newsletter\\_html/New\\_green\\_choices.html](http://www.sqconsult.com/content/newsletter_html/New_green_choices.html)

### SAHYOG: Twinning of European and Indian Projects on Bioenergy

The main aim of the project SAHYOG is to bring together leading organisations in the field of biomass production and bio-waste conversion research carried out within EU research programmes and related programmes by Indian national institutions. Through facilitating and coordinating project twinning, SAHYOG brings together project coordinators and other lead partners from past and ongoing projects and initiatives as well as international networks in order to consolidate R&D results, exploit synergies and thus build up a critical mass for future EU-India research collaboration. The following activities are possible under SAHYOG twinning:

- Research cooperation, exchange of researchers
- Organisation of joint workshops/meetings
- Development of common trainings
- Common literature reviews
- Exchange of tools, analytical methods and databases
- Exchange of data, information, knowledge and material

In addition, within SAHYOG a 2-day twinning workshop will be organized to facilitate and deepen contacts between interested stakeholders.

The priority strategic research themes for twinning of initiatives from India and Europe activities are:

- Bioethanol production from lignocellulosic biomass
- Thermochemical conversion technologies (pyrolysis, gasification)
- Anaerobic digestion technologies (biogas, biomethane, hydrogen)
- Algae production and conversion systems
- Biomass to chemicals – the biorefinery approach
- Feedstock production and genetic improvement of plants
- Sustainability and life cycle assessment

With respect to EU-India twinning, the following procedures are foreseen within SAHYOG:

- Get in contact with SAHYOG partners responsible for twinning (Robert Bakker, Rainer Janssen, Dominik Rutz)
- Sign Letter of Interest on India-EU SAHYOG twinning

- Define your specific areas of interest for research cooperation
- Cooperation contacts from India/Europe will be identified by SAHYOG
- Assistance for twinning activities will be provided within SAHYOG
- Participation in the SAHYOG twinning workshop will be facilitated

More information: <http://www.sahyog-europa-india.eu/>  
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### News about the Roundtable on Sustainable Biofuels (RSB)

The Energy Center of the École Polytechnique Fédérale de Lausanne (EPFL), a partner of the Global-Bio-Pact project, initiated the Roundtable on Sustainable Biofuels (RSB) in 2007. Under the coordination of the EPFL Energy Center, the RSB developed a third-party certification system for biofuels sustainability standards, encompassing environmental, social and economic principles and criteria through an open, transparent, and multi-stakeholder process.

Late 2011, the RSB Services Foundation was created to specifically focus on the certification and the related licensing activities.

To further focus on the stewardship and further development of the RSB Standard itself, as of January 2013 a separate entity was created with the designation RSB Association. The RSB Association is a not-for-profit entity organized under Swiss law. Rolf Hogan was selected as the new Executive Secretary and Sébastien Haye as the new Director of Standards.

The EPFL Energy Center will continue its engagement in research projects on sustainable bioenergy; examples include ITAKA, an EU FP7 project to produce sustainable biofuels for use in aviation and the development of processes intended to facilitate the certification of smallholders under the RSB Standard.

Website of EPFL Energy Center: <http://energycenter.epfl.ch>

Website of RSB: [www.rsb.org](http://www.rsb.org)

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### Legal Notice

Global-Bio-Pact is co-funded by the European Commission in the 7<sup>th</sup> Framework Programme (Project No. FP7-245085).

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Published and edited by WIP – Renewable Energies, Munich, Germany, 2013

