

# Task 4.7.2 Qualitative and quantitative assessment measures for social sustainability

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## 1 Introduction

In recent years, the bioenergy sector has captured much attention around the world. The fast expansion of biofuel production geographical areas has given rise to concerns about the potential risks of negative environmental and socio-economic consequences. In EU and other developed countries, the demand for bioenergy expansion comes from need to ensure energy security and to reduce greenhouse gas emissions. In less developed countries, energy security also plays an important role but, taking into account the need for economic development, there are additional drivers such as job creation and stimulation of local economy.

Many bioenergy companies publish Corporate Social Responsibility (CSR) reports on an annual basis. CSR has its roots in voluntary efforts by companies and corporations to present their impacts on society and environment, but the tendency towards CSR being mandatory significantly progressed in the last two years. On April 15, 2014, the European Council and the European Commission reached an agreement that *“all but guarantees that the forthcoming European directive on corporate social responsibility will require all publicly traded companies with more than 500 employees to report their performance on a number of non-financial metrics every year”*. (EC, 2014)

EU biofuel production companies will also have to follow these rules. A number of bioenergy companies already practice reporting a broader set of information and not just financial statement and general supplementing documents. One of the reasons is that investors and stakeholders started taking more interest in sustainability matters. The complexity and diversity of bioenergy sector and the absence of clear environmental, social and economic metrics for bioenergy sector from Global Reporting Initiative guidance creates significant barriers to identify and report sustainability information as accurate as financial information.

The main challenge in reporting on sustainability information is in determining which environmental, social, and governance (ESG) issues are the most significant in terms of their effect on value creation. Clear understanding of those dimensions of ESG performance is necessary. Defining which issue is substantial from value creation perspective can be even more important. The differentiation in CSR reporting among different global industries creates a need for developing sector-specific guidelines on what sustainability issues are relevant to a specific sector and the Key Performance Indicators (KPIs) for reporting on them may improve the ability of companies to report on their ESG performance. (Eccles, 2012)

While compiling CSR reports, it is important to add a materiality section, which identifies the top ESG issues of concern to both the company and external stakeholders. According to SEC's SAB 99, companies should consider quantitative and qualitative factors while reporting, and materiality aspects are not limited to financial information. An issue is “material” if it is expected that the information will substantially affect the company's decision-making process. That is why company needs to go through a materiality process that includes gathering input from employees, external stakeholders, top management and customers. As a result of this process, a Key Performance Indicator should be identified for each dimension of ESG. KPIs will help in building Materiality Matrix that many bioenergy companies already include in their annual voluntary CSR reports.

This paper will go through the general aspects of materiality and environmental, social, and governance issues, define methodology for Key Performance Indicator identification and describe the ways how it could be applicable to bioenergy industry.

## 2 Materiality

### 2.1 Defining Materiality

In today's dynamic and challenging corporate world, many corporate leaders started to realize that the materiality concept should be considered beyond the traditional and well-understood financial statement materiality perception. It seems that traditional interpretation of financial statement materiality does not capture non-financial business drivers such as **environmental, social and governance issues (ESG)**. ESG issues can be very much material and present risks across company's entire value chain ranging from the supply chain labor practices to the large scale industrial accidents and product safety disputes. (Deloitte, 2013).

#### **Definition of 'Environmental, Social and Governance (ESG) Criteria**

*"A set of standards for a company's operations that socially conscious investors use to screen investments. Environmental criteria look at how a company performs as a steward of the natural environment. Social criteria are used to examine how a company manages relationships with its employees, suppliers, customers and the communities where it operates. Governance deals with a company's leadership, executive pay, audits and internal controls, and shareholder rights. Investors who want to purchase securities that have been screened for ESG criteria can do so through socially responsible mutual funds and exchange-traded funds"*

*Source: Investopedia, 2014*

In today's reporting practices, ESG performance data voluntarily reported by companies and corporations that decided to be transparent and responsible to stakeholders and public about their commitment to sustainable business development. Typically, companies publish ESG information in its annual CSR report. The importance of ESG performance data to stakeholders is becoming increasingly recognized globally. Stakeholders realize that high awareness in the area of ESG data is beneficial for corporate leadership, operational efficiencies, best management practices and employees' and customers' loyalty may attract new investors and improve the company's image. This is why sustainability managers need to bridge available knowledge and expertise on materiality of ESG factors with investor relations managers and senior management executives on one hand, and investors and groups of stakeholders on the other hand.

However, reporting materiality of ESG factors is still a new tool for sustainability issues assessment that is not as developed as reporting financial materiality. For many companies, the problem is not that lack of ESG issues that stakeholders think are important. When and why these issues might become financially material to a company is the key challenge today. This is particularly difficult for ESG issues because they are often related to external events and could not be easily priced. The costs of external matters to others in the community, the entire value chain and in the wider ESG systems can be rather significant, which is why it is important to get quantitative data using social and environmental economics. Not including ESG information means that it has no value to the company. On the other hand, if ESG knowledge is well integrated into corporate decision-making, it will help predicting and possibly preventing upcoming issues before they can strike the company's image and provide competitive advantage to the company.

Concept, definition and interpretive guidance of materiality in corporate financial reporting have been evolving for decades. Looking on tradition definition of materiality used by US GAAP and International IFRS it easy to see that even in these definitions materiality determination is not limited to financial (quantitative) information. Both factors qualitative and quantitative are considerate. (SEC, 1999)

*An issue is "material" if there is a substantial likelihood that a reasonable person ...relying upon the report would have been changed or influenced by the inclusion or correction of the item ... financial management and the auditor must consider both "quantitative" and "qualitative" factors in assessing an item's materiality.*

SAB 99

*Information is material if its omission or misstatement could influence the economic decisions of users taken on the basis of the financial statements. Materiality depends on the size of the item or error judged in the particular circumstances of its omission or misstatement. Thus, materiality provides a threshold or cut-off point rather than being a primary qualitative characteristic that information must have if it is to be useful.*

*IAASB Framework for the Preparation & Presentation of Financial Statements, paragraph 30.*

Global Reporting Initiative (GRI) is using the following description for of materiality principle in its G3.1 "Materiality Principle," report: "The information in a report should cover topics and Indicators that reflect the organization's significant economic, environmental, and social impacts or that would substantively influence the assessments and decisions of stakeholders."

In May 2013 CRI launched its new Sustainability Reporting guidelines-G4. As it stated in GRI Newsletter "GRI G4 Sustainability Reporting Guidelines have an increased emphasis on the need for organizations to focus – in the reporting process and final report – on those topics that are material to their business and their key stakeholders. This 'materiality' focus will make reports more relevant and more credible. This will, in turn, enable organizations to better inform markets and society on sustainability matters." Nevertheless, the new guidelines for reporting social sustainability are still very complicated and broad.

If the GRI guidance is followed, it is recommended that companies should consider what is material to stakeholders, but GRI guidelines do not provide any detailed information on what that could mean for a company and how to evaluate those important material issues. For example: Is the number of doctor's visit to local medical office suddenly increased? Is it happened because large scale biofuel enterprise opened production and processing facilities nearby and deforested area causing air pollution? Is there a drop in the number of pupils in the local school in Indonesia village? Is it happened because they are working in the fields collecting jatropa seeds for recently opened biofuel production factory?

## 2.2 Need for Sector-specific ESG Materiality

The number of reports on sustainability by companies increased from 26 in 1992 to 5,819 in 2011 and continues to grow (CR, 2012). There are, however, still many obstacles to making sustainability information as important as financial information. The biggest challenge is to determine standards for sustainability information that is as precise as standards for financial information reporting. Measuring dimensions of sustainably performance without clearly defined standards is a very difficult task. (Eccles, 2012)

Reporting materiality is even more difficult. Reporting materiality requires companies to evaluate impacts of ESG information and issues in more explicit way. Since GRI guidance recommends a huge list of metrics that might be relevant or might not be relevant to the company and stakeholders, it is essential to choose the correct combination of factors that are important to both company and stakeholders. Moreover, thinking outside of just traditional financial performance assessment and to include non-financial issues, such as ESG risks and opportunities should be also considerate. While using basic guidance of GRI standards that has established over 400 metrics that might be relevant to the company and stakeholders and ultimately deemed financial side, companies need to expand their view of how financial and non-financial matters can be reported and integrated into decision making process for specific industry sector.

The differentiation in CSR reporting among different global industries creates a need for developing sector-specific guidelines on what sustainability issues are material to particular sector and the **Key Performance Indicators (KPIs)** for reporting on them would significantly improve the ability of companies to report on their ESG performance. Issues like deforestation or climate change or Indigenous Rights might be very important for one industry or completely irrelevant for another that is why materiality must be defined on a sector-specific basis. (Eccles, 2012)

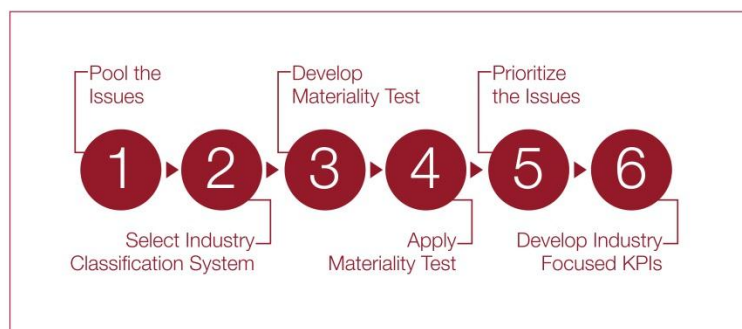
A 2010 study by Lydenberg, Rogers, and Wood proposed an approach for prioritizing sector-specific ESG topics that could provide the basis of sustainability disclosures by considering the following five tests:

1. *Financial impacts/risks: Issues that may have a financial impact or may pose a risk to the sector in the short-, medium-, or long-term (e.g., product safety)*
2. *Legal/regulatory/policy drivers: Sectoral issues that are being shaped by emerging or evolving government policy and regulation (e.g., carbon emissions regulation)*
3. *Peer-based norms: Sustainability issues that companies in the sector tend to report on and recognize as important drivers in their line of business (e.g., safety in the airline industry)*
4. *Stakeholder concerns and societal trends: Issues of great importance to stakeholders, including communities, non-governmental organizations and the general public, and/or reflect social and consumer trends (e.g., consumer push against genetically modified ingredients)*
5. *Opportunity for innovation: Areas with potential to explore innovative solutions that benefit the environment, customers, and other stakeholders, demonstrate sector leadership, and create competitive advantage.*

*Lydenberg, Rogers, and Wood, 2010*

Using the above tests in application to an industry branch, level rather than just to a single company, can be used as an effective tool for identifying that all companies inside the industry face globally. These tests will help stakeholders to identify sustainability issues that are affecting industry the most. Looking at bioenergy industry, it easy to see that the large-scale biofuel production enterprises tend to have similar business models, produce similar products, have similar methods of handling resources and operate within the same regulatory framework. That is why most of the issues can be comparable. However the biggest challenge in bioenergy industry will be the diversity of biofuels production value chains and numerous sources of feedstock. It raises the question that Sector-specific ESG Materiality can be even more sectorial depending on the feedstock and the region of production.

In order to meet the challenges of comparability and practicability in identifying **Key Performance Indicators (KPIs)** inside the industry or within of one industry sectors Lydenberg and his colleagues also created *“A Six-Step Method for Identifying Key Performance Indicators by Industry Sector”* (Figure 1) that potentially, but with some modifications, can be applicable to bioenergy industry.



- 1 Assemble a broad universe of sustainability risks or opportunities that is applicable to all industries
- 2 Select an industry classification system (for example, The Industry Classification Benchmark (ICB))
- 3 Establish a definition of **materiality** to address non-financial issues
- 4 Apply the **materiality** test to the sustainability issues potentially applicable to each industry sector
- 5 Rank the **materiality** of these issues within each industry and establish a threshold that defines which issues are key.
- 6 Create a tailored set of key performance indicators for the most material issues for each sector. These **KPIs** should be rooted in three core principles: simplicity, materiality, and transparency.

**Figure 1** A Six-Step Method for Identifying Key Performance Indicators by Industry Sector (Lydenberg, 2010)

### 3 ESG for Bioenergy Sector

Although the amount of sustainability reports from bioenergy sector has increased considerably in the last decade, biofuel production companies are still failing to disclose integrated reports that will combine traditional financial performance assessment and reflect non-financial issues, such as ESG risks and opportunities.

As mentioned before, the biggest challenge in bioenergy industry is the diversity of biofuels production value chains, numerous sources of feedstock and spread of geographical areas.

That is why ESG metrics may impact biofuel production companies through stakeholders' actions along the entire value chain. Those impacts could be either direct or indirect.

Examples of such impacts are presented in Figure 2

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#### **Direct operations risk**

- *Production facilities accidents/ equipment failure/*
- *Environmental pollution including air and water pollution and penalties and fines relates to it*
- *Direct social risks: employee strikes, health and safety regulation control*

#### **Supply chain risk**

- *Ingredients/natural resource use, such as palm oil, protected forest, or water*
- *Social risks: indigenous rights, child and women labor*
- *Natural disasters and weather catastrophes*

#### **Final Product risk**

- *Ingredients: toxic chemicals, food-versus fuel issue*
  - *Product performance, recalls, boycotts by consumers*
  - *Governance*
- 

**Figure 2** ESG metrics impact (Modified from DeLloite, 2013)

Several years ago, the Global Reporting Initiative (GRI) came up with initiative for sector-based reporting and developed sector supplements to expand its generally applicable G3 core guidelines. Complementing these sector supplements, National Annexes connected global GRI Guidelines to the particularities of local policies, regulations and general rules, as well as cultural specifics and differences. Until recently, reporting on sustainability have been considered as a voluntarily option for global companies but, in 2009, the GRI issued its Amsterdam Declaration suggesting that sustainability reporting should become mandatory.

On April 15, 2014, the European Council and the European Commission reached an agreement that *“all but guarantees that the forthcoming European directive on CSR will require all publicly traded companies with more than 500 employees to report their performance on a number of non-financial metrics every year”* (EC, 2014). Additionally, the content of the GRI G3 / G3.1 Sector Supplements has been restructured for better fit into new G4 Guidelines. Even though, GRI G3 and new GRI G4 Guidelines are covering only 10 industrial sectors and it does not categorize Bioenergy industry as separate sector. Biofuels only mentioned in G4 sector disclosure on Oil and Gas and Food processing. That is why Lydenberg's, *“Six-Step Method for Identifying Key Performance Indicators by Industry Sector”* can be considerate an effective tool to help bioenergy companies in expanding corporate reporting though including ESG data into assessment process and applying ESG metrics along the entire value chain. It will also assist and clarify methodology and process of building Materiality Matrix for social sustainability reporting.



### 3.1 Applying the Six-Step Method for the Bioenergy Sector

Clear guidance to bioenergy companies regarding what is material to them has a great potential to motivate companies to compete on sustainability measures. Six-Step Method for Identifying Key Performance Indicators developed by Harvard professor Lydenberg and his colleagues can be applicable for bioenergy sector but some modifications are required because of bioenergy sector specifics. The main challenges are the diversity of bioenergy value chain, variety of feedstock and spread of geographical areas. The KPIs selection process will result in metrics for the assessment of 20-30 indicators sustainability for bioenergy sector but then these indicators should be divided by bioenergy subsectors. For example KRIs for non-food agriculture biomass value chain produced in India will be quite different from KPIs applicable along the value chain for bioenergy derived from MSW in Sweden.

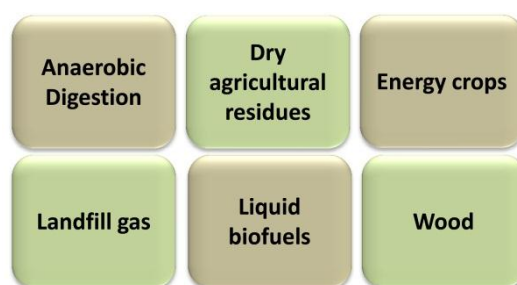
### 3.2 Step One

Accumulate a broad pool of sustainability threat and opportunity factors that could be applicable to bioenergy sector. Currently, existing reporting initiatives that are dealing with corporate sustainability reporting offer a wide variety of issues to choose from.

Global Reporting Initiative (GRI), for example, is now considered to be the best way to start, since it has developed diverse set of issues from which one can work from. Even more, GRI has sector disclosures and guidance. GRI sustainability indicators related to Bioenergy sector are mentioned in two sectors: Food Processing and Oil and Gas. There are many advantages of starting with GRI's scope of sustainability issues the most important one is that they have been identified through the process of continuing multi-stakeholder engagement that looks beyond single group's view of long term impact of corporate performance. (Lydenberg, 2010)

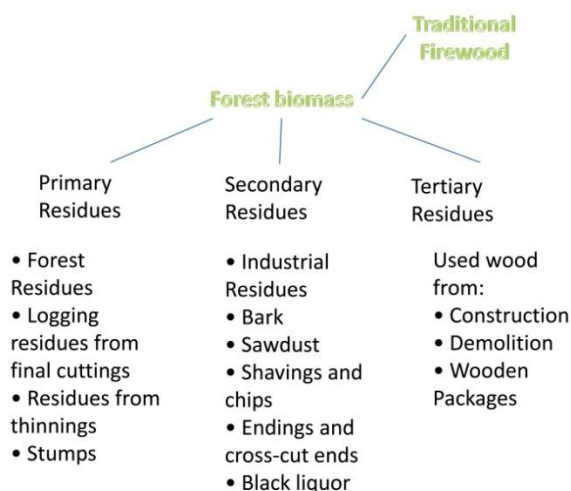
### 3.3 Step Two

Step two requires bioenergy industry classification system. The bioenergy sector is complex and may have many combinations of feedstock types, supply systems, pre-processing possibilities, technologies for conversion, and channels for distribution and varies market segment. A number of bioenergy industry classifications already exist. The general classification is presented in Figure 3



**Figure 3** Bioenergy sectors classification (Modified from SEI, 2005)

Furthermore, these 6 subsectors are further subdivided. For example, the Wood-based biomass sector could be classified into many of smaller subsections that depend on primary feedstock. Figure 4 shows a number of potential feedstock that could be used in Wood-based bioenergy subsection.



**Figure 4** Classification of wood based biomass (modified from Röser, 2012)

Looking on figure 4 it is possible to derive four smaller subsections: production of *Wood based bioenergy derived from primary residues*, *Wood based bioenergy derived from secondary residues*, *Wood based bioenergy derived from tertiary residues* and from *traditional firewood*. It is at this subsector level where indicators must be ultimately identified and applied.

### 3.4 Step Three

The bioenergy sector should create its own definition of materiality for non-financial issues. Establishing sector-specific definition of materiality is important for all future discussions of disclosure. Clear understanding the materiality of ESG issues and how materiality changes with respect to certain bioenergy sector and to specific value chain will play essential role in the process of ESG metrics implementation in reporting scheme.

Non-financial definition of materiality is much broader than financial. That is why one of the ways that will help in establishing sector-specific definition of materiality is sector-based materiality test. (Lydenberg, 2010)

Materiality test should include five factors described in Table 1:

<b>1. Financial impacts and risks</b>	Issues that may have a financial impact or may pose a risk to the specific bioenergy sector or subsector in the short or long-term (for example, product safety)
<b>2. Legal, regulatory, and policy factors</b>	Bioenergy sector issues that are being shaped by emerging or evolving government policy and regulation
<b>3. Industry Norms and Competitiveness Issues</b>	Sustainability issues that companies in the sector tend to report on and recognize as important drivers for industry
<b>4. Stakeholder concerns and societal trends</b>	Issues that are of high importance to stakeholders, (for example, consumers protest against biofuels produced in third world countries using child labor)
<b>5. Opportunities for innovation</b>	Issues that companies can demonstrate industry leadership in finding innovative solutions to bioenergy challenges, including technology transfer

**Table 1** Materiality test (modified from Lydenberg, Rogers, and Wood, 2010)

Data evaluation received for materiality test will result in defining sector specific set of material issues that could be later used for building materiality matrix and implementing successful corporate sustainability report

### 3.5 Step Four

The next step is application of materiality test to the sustainability issues potentially relevant to each bioenergy subsector or specific bioenergy value chain. Score scale should be developed for sustainability issues according to their importance for each of the five aspects of materiality test.

For example, for the bioenergy industry, the issue of mechanization for feedstock production versus manual labor in Brazil has substantial financial consequences, may soon become a subject to regulation on mandatory basis, is widely reported on by bioenergy corporations, is of substantial concern to ecologists, and presents an opportunity for innovation in the identification of new environment-friendly technologies that can be used in the area. This issue will score high on the materiality test. (Lydenberg, 2010)

### 3.6 Step Five

This step requires ranking the materiality scores of these issues inside bioenergy as a sector and within bioenergy subsectors and establishing a threshold that defines those issues as key indicators. Once the materiality test has been applied to the broad set of sustainability issues, a line should be drawn. This line establishes an acceptable threshold for key materiality indicators.

For example, within the bioenergy industry as a sector, food-versus-fuel, land and water rights, climate change management, labor safety, impact on local communities, consumer behavior and health and safety would be among the highest scoring sustainability key indicators. If looking into bioenergy subsectors the scope of key indicators could be quite different from one subsector to another.

### 3.7 Step Six

In the last stage the unique set of metrics for each of the key indicators that are most material for each specific subsector of bioenergy industry should be created. In the final part it is essential to determine proper unit of comparative measurement for each of the sustainability key indicators

For example for the wood-based biomass subsector of the bioenergy industry, the metrics could be customer number of accidents and medical leave for every thousand workers that happened during the year or total annual carbon emissions in metric tons for climate change caused by transportation of wood-based feedstock to processing facilities. Metrics must be identified for each of the bioenergy subsectors and for specific bioenergy value chains.

### 3.8 The social dimension of ESG for bioenergy

Since the guidance for what is material in the realm of ESG performance and sector specific guidelines do not yet exist, bioenergy companies are trying to determine this themselves using stakeholders' engagement approach. This approach helps in evaluating the level of importance from economic, environmental, and social impacts. Furthermore it may be used for building a materiality matrix, with one measurement of "importance for the company" and the other of "importance to stakeholders," which can result in a wide range in the quality of the deviations within the materiality matrix. Looking on different reports prepared by bioenergy companies, wide variation in practices of building such matrix can be seen. It is noticeable that some companies include materiality matrix in their report, but prefer to make them clean from negative issues in other words do not populate the matrix. Some companies tend to present a big list up to 50 "material" issues, while others report only on 10 material risks or opportunities. (Eccles, 2012)

Social dimension of ESG for bioenergy sustainability directly related to well-being of people in particular area. Issues like access to food and water and affordable energy, their standard of living in both economics and safety, and their attitudes toward bioenergy on the present and future markets.

Since social sustainability management is a continuous improvement process, it is essential to maintain a dialog with stakeholders in order to define the target criteria of this process. Bioenergy is a complex industry that is why it requires multi-stakeholder approach which guarantees that the different concerns, especially concerns directly affected by policy decisions, are heard and taken into account. It is also important to maintain constant dialogue which helps to balance between economic development, environmental issues and social concerns. In particular, stakeholder engagement plays a critical role in educating stakeholders about the practical constraints and opportunities when it comes to profitable foreign investments. The aim of this dialogue is to find out what expectations businesses and stakeholders have from bioenergy sector.

The Social Materiality Matrix Approach can be used as tool to navigate and adjust such dialogue. In order to understand the meaning of this approach first the sector-specific materiality definition should be defined.

The following sections describes the stakeholders' engagement process, identify basic principles and methodology for building Materiality Matrix and show examples how it is performed in bioenergy industry companies.

## 5 Bioenergy industry: Stakeholders

### 5.1 Dialogue with key stakeholders

As it has been mentioned before, stakeholders engagement plays an important role in the process of building materiality matrix. Stakeholders’ engagement can ensure broad support and buy-in for decisions on bioenergy at both a project and a policy level. It ensures that stakeholders are informed of the developments, which is a first step to gaining support for the policy or project and its later implementation. It does this by allowing stakeholder differences to be addressed through dialogue, and for conflicts to be managed on time. (UNEP, 2005)

On the policy development level, meaningful stakeholder participation in the decision making and monitoring process is the most reliable way to optimize benefits and prevent negative impacts from policy. This is why a multi-stakeholder approach ensures that the different concerns, particularly those most impacted by the policy decisions, are heard and taken into account, and that the balance between economic growth, environmental issues and social concerns and different interests by different groups is established constantly and maintained through dialogue and debate.

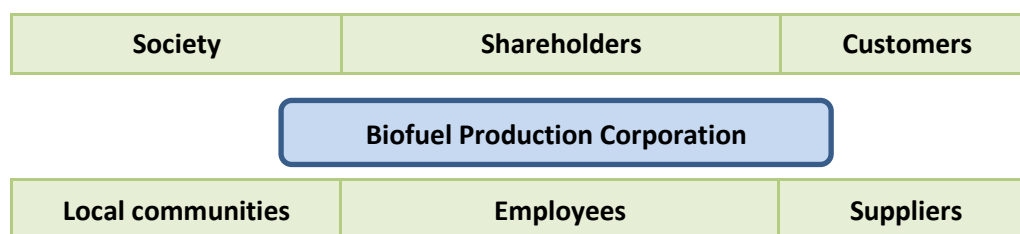
In particular, stakeholder engagement plays a critical role in educating stakeholders about the practical constraints and opportunities when it comes to commercial foreign investments.

Effective stakeholder engagement can also help government with compliance. Where stakeholders are involved in monitoring activities, they can help notify authorities if unanticipated consequences arise that require adaptive management processes. (UNEP, 2005)

### 5.2 Stakeholders identification

In order to compile efficient social sustainability materiality analysis on annual basic, any biofuel production company need to perform mapping of stakeholders and regularly communicate with them on sustainability risks and opportunities that may change yearly.

If company systematically identifies key groups of stakeholders, determine material issues for each group and learn about specific needs of stakeholders it helps with prioritizing of key areas for risks and opportunities. The most effective multi-stakeholder engagement strategies will bring diversity of perceptions from different groups including investors, shareholders, society, local communities, indigenous groups,, employees, suppliers and customers. Table 2 represents basic groups of stakeholders that usually identified for biofuel production companies.



**Table 2** Biofuel production stakeholders groups (modified from Abengoa Bioenergy)

### 5.3 Forms and channels of dialogue

In order to build successful relationships and engaging stakeholders into company’s performance and its commitment to sustainable the trust based two-way communication process is necessary.

Creation of dialogue channels is crucial. Dialogue channels allow company to understand specific characteristics of each group of stakeholders and their needs and concerns. Table 3 show the example of how Abengoa Bioenergy building its relationship with stakeholder using two-ways-communication tool for creating effective dialogue channels.

Stakeholders	Company-stakeholders dialogue channels	Stakeholder-company dialogue channels
<b>Society</b>	<ul style="list-style-type: none"> <li>○ Company’s web-site</li> <li>○ Annual Reports</li> <li>○ Department of Marketing and Communication</li> <li>○ CSR department</li> <li>○ Visiting production plants by universities, NGOs</li> <li>○ Open days</li> <li>○ Public forums and conferences</li> <li>○ Social networks</li> </ul>	<ul style="list-style-type: none"> <li>○ Press releases</li> <li>○ Department of Marketing and Communication (mailbox)</li> <li>○ CSR department</li> <li>○ Production plants visits</li> <li>○ Open days</li> <li>○ Trade shows, forums, conferences</li> <li>○ Shareholders (mailbox)</li> <li>○ Social networks, including blogs</li> <li>○ Survey, interviews</li> </ul>
<b>Local communities</b>	<ul style="list-style-type: none"> <li>○ Company’s web-site</li> <li>○ Annual Reports</li> <li>○ Press releases</li> <li>○ Social media and networking, blogs</li> <li>○ Tradeshow, forums, conferences</li> <li>○ Open days</li> <li>○ Production plant visits by local communities representatives</li> </ul>	<ul style="list-style-type: none"> <li>○ Department of Marketing and Communication (mailbox)</li> <li>○ CSR department (mailbox)</li> <li>○ Assessment of beneficiaries of social programs and initiatives</li> <li>○ External whistleblower channel</li> <li>○ Communal surveys and interviews</li> <li>○ Shareholders (mailbox)</li> </ul>
<b>Suppliers</b>	<ul style="list-style-type: none"> <li>○ Company’s web-site</li> <li>○ Structured process for measuring supplier effectiveness</li> <li>○ Security management system tools</li> <li>○ Scheduled visits to the suppliers</li> <li>○ Regular questionnaires</li> <li>○ Annual Reports</li> <li>○ Social networks</li> </ul>	<ul style="list-style-type: none"> <li>○ Satisfaction survey</li> <li>○ IT application tool</li> <li>○ Structured process for measuring supplier effectiveness</li> <li>○ External whistleblower channel</li> <li>○ Communal surveys and interviews</li> <li>○ Shareholders (mailbox)</li> <li>○ Supply department (mailbox)</li> <li>○ CSR department (mailbox)</li> </ul>
<b>Customers</b>	<ul style="list-style-type: none"> <li>○ Company’s web-site</li> <li>○ Social networks, including blogs</li> <li>○ Focus groups</li> <li>○ Direct phone line</li> <li>○ Customers service department</li> <li>○ Social media</li> </ul>	<ul style="list-style-type: none"> <li>○ Customers service department (mailbox)</li> <li>○ External whistleblower channel</li> <li>○ Suggestion box</li> <li>○ Social networking, including company’s blog</li> <li>○ Department of Marketing and Communication (mailbox)</li> </ul>
<b>Shareholders</b>	<ul style="list-style-type: none"> <li>○ Company’s web-site</li> <li>○ Biofuels conferences</li> <li>○ Press campaign promoting use of biofuels</li> <li>○ Public presentations, press releases</li> <li>○ Publication of quarterly reports</li> <li>○ Q&amp;A session following results presentations</li> <li>○ Annual reports</li> </ul>	<ul style="list-style-type: none"> <li>○ Investor relations department</li> <li>○ Shareholders assistance mailbox</li> <li>○ Investors and analysts meeting</li> <li>○ Tours of the company’s facilities for investors</li> <li>○ CSR department (mailbox)</li> <li>○ Q&amp;A session following results presentations</li> <li>○ Public presentations</li> <li>○ Satisfaction surveys</li> </ul>
<b>Employees</b>	<ul style="list-style-type: none"> <li>○ HR department</li> <li>○ Newsletters, mailing</li> <li>○ Employee self-service</li> <li>○ Health and safety committee</li> <li>○ Equal opportunities committee</li> <li>○ Workers committee</li> <li>○ Departmental seminars and talks, on-line trainings</li> <li>○ Annual report</li> </ul>	<ul style="list-style-type: none"> <li>○ Company’s web-site</li> <li>○ Corporate intranet</li> <li>○ Suggestion box</li> <li>○ Surveys on working conditions and environment</li> <li>○ Management feedback program</li> <li>○ Unions</li> <li>○ Workers committee</li> <li>○ Internal whistleblower channel</li> </ul>

**Table 3** Dialogue channels (modified from Abengoa Bioenergy CSR 2012 report)

Assessment of each group specific characteristics and aspects by company's sustainability management, identifying and assessing expectations about the company's positioning and programs in the area of social sustainability will contribute to the materiality of issues and their relevance to the bioenergy value chain

A wide number of different techniques exist in order to get stakeholders involved in a dialog, including online and print media, surveys, talks with experts, workshops, local dialog sessions, and regional dialog events. Obtaining stakeholder opinions for the purpose of determining the materiality of sustainability topics could be also done through memberships in global associations, organizations, and sustainability initiatives. Local dialogs with communities and neighbors are also very important. All of the above provide company with data for building new **Social Materiality Matrix** every year.

### 5.4 Compile the matrix with stakeholders, Zilor example

Below is the example of how Brazilian bioenergy company Zilor builds its materiality matrix in compliance with stakeholders which is later used in their annual Sustainability Report (Zilor, 2011)

*Zilor is a Brazilian Company operating in the food and energy sectors, developing products from sugarcane with high added value. A traditional producer of sugar and ethanol, Zilor took a strategic decision to diversify its operations and began producing clean electricity from sugarcane biomass, plus ingredients for food and animal feed based on biotechnological processes at the Biorigin business unit*

*Stakeholder consultation to build the Zilor materiality matrix takes place every year with the help of a specialist consultancy, so providing continuity to the process initiated in 2009 that provided support for development of the Sustainability Report. The process sought the perspective of internal and external stakeholders in order to identify the main topics to be addressed in greater detail in the report, while giving the Company an important opportunity for dialogue with different stakeholder groups.*

*The list of topics presented to stakeholders was based on the subjects covered in the previous Zilor report, plus the reports of other companies and an analysis of matters of current interest for the sector.*

*Employees were the first to be consulted, via panels held in Lençóis Paulista and São Paulo. These meetings not only evaluated the topics, but also listed the stakeholders that they considered to be most relevant for the Company. This prioritization was essential to define which external stakeholders to consult. Professionals in different positions and drawn from different areas of the Company participated in this phase.*

*There were 51 consultations in all, of which 16 took place via telephone. Events with the live presence of participants were held in Lençóis Paulista, with members of the community and of local authorities from the three municipalities where Zilor operates (Lençóis Paulista, Macatuba and Quatá). These events also involved representatives of Copersucar, financial institutions, industry associations, agricultural partners, customers, suppliers and competitors. At the end of the process the topics were ranked by relevance, and 10 were identified as priorities.*

*The 10 material topics identified through stakeholder involvement serve as the basis for this Sustainability Report, which addresses the main concerns of the interested parties with respect to Zilor.*

**10 most important topics for Zilor:**

- Equal treatment
- Forced or compulsory labor (including suppliers in the production chain)
- Management of waste and effluents
- Product quality
- Minimization of CO2 emissions
- Contamination of products
- Management of impacts on biodiversity
- Health and safety of workers in the industry; risks and accidents at work
- Impacts of products for consumer health
- Involvement with the development of public policies

Quoted from Zilor' annual Sustainability Report, 2011

## 6 Building the Materiality Matrix

Many organizations currently reporting under the G3 guidelines follow a materiality matrix template that compares impacts against influence on stakeholder decisions by focusing on corporate activities and stakeholder communication. Using materiality matrices provides reporting organizations with a clear and visual means for improving transparency in communications with stakeholders.

Description below represents step by step instruction for building materiality matrix that is based on CRI G3 guidelines. However these guidelines recommended for use only until the end of 2015. Starting from 2016 GRI recommends using GRI G4 guidance.

The main idea of the new G4 guidelines is to offer improved and more efficient guidance for material issues identification. Even though the sector-specific guidance and sectors disclosures is not a new feature for GRI reporting, it requires a lot of improvements in the G4 guidelines. As for now G4 guidelines are not finalized, there is still time to impact the materiality topics by individual industries and the range of sector specific supplements. (Scholz, 2012)

### 6.1 Step by step

**Step 1:** Shared value can be created through identification of shared priorities. Company should identify and prioritise major stakeholders to include into social materiality matrix building process. Stakeholder dialogue which should take place in both structured and unstructured ways plays a vital role for materiality of reporting. For example, the following groups can be considerate as stakeholders: investors, employees, shareholders, consumers, suppliers, indigenous people, local mass media, local and national authorities and general public.

**Step 2:** Identify and prioritize major social sustainability indicators (local economy developments, labor practices, human rights, land rights, society, product responsibility) using GRI Guidelines. Decide that are the most important social sustainability indicators in relation to particular bioenergy production company, using reference to major stakeholders. The number of indicators can vary and will mostly depend on the scope of activities of bioenergy producer and resources that company uses for biomass feedstock production. To determine the importance of indicators, company surveys can be conducted, screening of social issues in the local media, and analyses company's internal documents.

**Step 3:** Conduct a survey across the company with major stakeholders to rank social sustainability indicators on two levels:

- Importance
- Impact

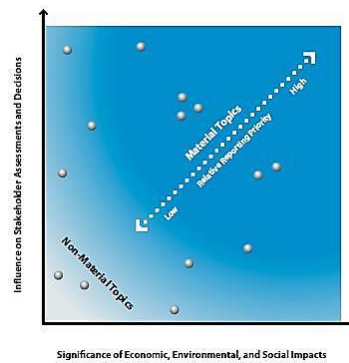
Scale for surveys can vary

**Step 4:** Rank the indicators on a matrix using two axis, one for importance, and one for impact (SRE, 2012)



### 6.2 Materiality Matrix based on GRI G3.1

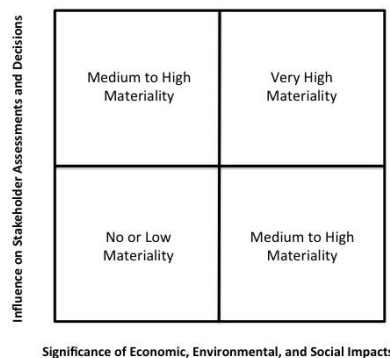
Based on GRI recommendations, companies need to plot topics and issues on a matrix chart, with the X-axis representing issues that cause significant impact, and the Y-axis representing issues that are influential amongst stakeholders. (GRI, 2011) Issues that fall on the top right corner of the chart are deemed material, as shown on Figure 5



**Figure 5** Materiality Graph from GRI G3.1 Guidelines

How does one work out which issues cause ‘significant’ environmental, social or economic impact? What makes an issue ‘important’ to an organization? These are not easy questions and organizations apply numerous approaches to assess which issues are material and which are not (SRE, 2012)

Figure 3 represents the same idea the same idea of GRI G3.1 but in form in the form of a 2-by-2 matrix. Along the x axis GRI’s first dimension of materiality shown; along the y axis, the second one. Figure 6 also includes some interpretation as to how impacts in each quadrant can be understood.



**Figure 6** Materiality Matrix based on GRI

According to GRI G3.1 in general:

- For issues that can be measured quantitatively such as greenhouse gas emissions or environmental pollution, there are established methods such as environmental impact assessment (EIA) and life cycle assessment (LCA) to analyze significant impacts.
- For issues that are qualitative in nature, organizations can use methods such as stakeholder engagement, internal reflection and prioritization exercises to assess materiality.

The type of issues that are deemed significant will vary markedly between organizations in different industries, and even between players in the same industry. (CRI, 2011)

### 6.3 Social Materiality Assessments and Materiality Matrix, Enbridge example

For the Enbridge 2012 CSR report and previous reports, Enbridge performed materiality assessments with groups of employee subject-matter experts using CRI guidance framework Figure 7.

In their materiality assessments, Enbridge groups of subject-matter experts take into account following factors:

- The main concerns and future challenges facing the energy sector;
- Relevant laws, international agreements and voluntary agreements important to Enbridge and our stakeholders;
- Recognized impacts, risks and opportunities that affect sustainability;
- Enbridge's values, policies, strategies, management systems, goals and targets;
- Enbridge's stakeholders' interests and expectations;
- Significant risks facing Enbridge;
- Enbridge's core competencies and the manner in that they contribute to sustainable development.

<i>Social Performance</i>	
<b>Material subject</b>	<b>Details available in report section</b>
Training and Development	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Training and Awareness LA10, LA11 HR3
Employee Compensation	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Total Compensation LA3, LA14 EC1
Employee Engagement	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Talent Management; Employee Perspectives Survey
Succession Management	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Talent Management; Succession Management
Injury Rates	LA7, LA8
Stakeholder Engagement	Governance, Commitments and Engagement → Stakeholder Engagement
Landowner Relations	Social Performance chapter, Part 3 → SO1 → Community and Landowner Relations
Process Safety Management	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Goals, Approach and Performance → Health and Safety Management See also: Environmental Performance chapter → EN23-EN27
Contractor Safety Management	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Goals, Approach and Performance → Health and Safety Management
Emergency Response	Social Performance chapter, Part 1 → Labour Practices and Decent Work → Goals, Approach and Performance → Health and Safety Management Social Performance chapter, Part 3 → SO1 → Community and Landowner Relations See also: Environmental Performance chapter → EN23-EN27
Aboriginal Rights	Social Performance chapter, Part 3 → SO1 → Aboriginal and Native American Relations

**Figure 7** Social performance indicators based on GRI framework (Enbridge CSR, 2012)

Every year, Enbridge subject-matter experts reconsider the matrix to ensure that they account everything for shifting levels of stakeholder interest and business impact. (Enbridge, 2012)

The matrix below illustrates the Social Performance subject areas that have been determined as material to Enbridge as company (Internal evaluation) and to Enbridge stakeholders groups (External evaluation), These are ranging from less material in the lower left corner and increasing in material importance up to the right corner, where the subjects of highest interest to our stakeholders and highest impact for the company are listed (Enbridge, 2012) Figure 8



**Figure 8** Social Materiality Matrix (modified from Enbridge CSR, 2012)

Recently, Enbridge published a new CSR report. Sustainably –related subjects have been identified based on new GRI’s G4 reporting guidelines. Evidently, Enbridge sustainably management performed materiality assessments and the interviews that resulted in only one matrix that included all sustainability-related subjects (environmental, economic and social). Comparing Figures 8 and 9, it is possible to see how the importance of some social issues shifted from one sector to another or have completely disappeared from the matrix.



**Figure 9** Combined Materiality Matrix (modified from Enbridge CSR, 2013)

## 7 Conclusions

The trend of Corporate Social Responsibility reporting soon to become mandatory for all EU companies with more than 500 employees will definitely affect most EU biofuel production enterprises. Currently, there is no clear guidance for bioenergy industry on how to assess non-financial materiality issues and integrate them into CSR. Globally, investors started to recognize the importance of materiality of non-financial factors, and biofuel production companies are put under a lot of pressure to provide investors and stakeholders with explicit information adequate for positive decision making. The dynamics of global reporting development require sustainability be fully integrated into the strategy and operations of bioenergy companies.

The Global Reporting Initiative (GRI) does provide a general framework against which company can evaluate and report its economic, environmental and social performance. This general standardized approach creates transparency and accountability for many industries and also allows performing benchmarking against previous years and against competitors performance within the industry. This general CSR framework is already used by some bioenergy companies while compiling CSR reports. However, the complexity and diversity of bioenergy sector does not allow fully using Global Reporting Initiative guidance and report sustainability information as accurate as financial information. Bioenergy sector specific standards should be developed within GRI framework.

In this paper, a framework has been put forward for developing bioenergy sector-specific materiality matrix and sustainability reporting standards. Those standards should be identify through development of KPIs, industry specific systems on the subsector -level, using multi stakeholder approach and the adaptation of relevant indicator concepts from other sites including bioenergy sector-wide indicator requirements. A shared structure of ESG dimensions and accepted methodology of KPIs identification, permitting identification of issues that are common across the most of bioenergy value chains will be crucial tool of communication between stakeholders and bioenergy companies.

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