

## **Building Sustainability into a Contract: How to create more “Green” Supply Chain Contracts<sup>1, 2</sup>**

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### **ABSTRACT**

Sustainability in supply chain can have an important impact on the overall well-being of society and the environment. In fact, many companies work on adopting a sustainable approach since different activities can harm the environment, the economy or the society. In this paper, we considered the contract as an essential management tool for supply chain projects. As a matter of fact, we studied if it is possible to apply sustainability concepts to a contractual framework to create more “green” supply chain contracts. Using a Multi-Attribute Decision Making as well as relative and additive weighting techniques, we analyzed how different alternatives can be adopted. Finally, we demonstrated how including sustainability provisions in supply chain contracts and encouraging local provisions and employment can help integrating sustainability in supply chain project contracts.

**Keywords:** Sustainability, Supply chain, Procurement, Contract, Industry, Project Management

### **INTRODUCTION**

Nowadays, organizations are facing several challenges. In fact, it is getting more complex to manage projects due to the fast-changing and highly competitive environments. Also, it became important to combine economic, social and environmental aspects to build sustainable projects. However, when focusing on sustainability issues, many firms do not pay attention to the contract as an essential management tool for organizing and implementing the different viable actions. As a matter of fact, contracts are regarded to be a critical and strategic factor in projects. For this reason, it could be very interesting to adopt a sustainable approach when dealing with contracts to support fundamental rights and environmental protection.

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In all organizations, different activities are carried out to keep improving on many levels. For many companies, procurement directors are starting to implement sustainable procurement programs since at least 75% of carbon emissions are from the supply chain. Hence, it is very interesting to take a closer look at the supply chain area in which many projects are put in place. For example, some companies work on reducing costs and lead time, on rationalizing suppliers and inventories or on moving from a local to a global supply chain. This kind of business changes requires a good application of project management principles.

Therefore, we will focus on building sustainability into supply chain contracts. In fact, integrating the concepts and procedures of sustainability into the traditional supply chain contracts is believed to change supply chain practices to be more sustainable and to comply with the codes and standards of sustainability.

### **Step 1: Objective statement**

The purpose of this paper is to consider whether it is possible to apply this sustainability concept to a contractual framework and to study how it can be adopted within the supply chain industry.

## **METHODOLOGY**

To apply the sustainability concept to supply chain contracts, many alternatives can be put in place. The first step would be to develop these feasible alternatives. Then, to develop their different outcomes and cash flows. After choosing the different criteria, an analysis and comparison of the alternatives will be established. Finally, the better alternative will be chosen and a post-evaluation of the results will be done.

### **Step 2: Alternative solution**

Firstly, the different alternatives are the following:

- Include “sustainability” provisions in contracts
- Cover sustainable issues in contract clauses by defining minimum sustainability criteria
- Define responsibilities and obligations of generated waste management
- Encourage local provisions and create local employment and business opportunities

### **Step 3: Attributes to evaluate alternatives**

Secondly, some attributes were defined to evaluate each of these alternatives:

- **Ease of implementation:** Is the alternative going to be implemented easily tacking into account the different stakeholders and all the constraints?
- **Cost of implementation:** Will the implementation of the alternative cost too much, or is the cost going to be low?

- **Respect of law:** Is the legal aspect taken into account when choosing the alternative?
- **Feasibility according to location:** will the alternative be easy to put in place in any location?

### **Step 3: Development of outcomes**

Thirdly, a development of the outcomes of each alternative is made:

- Including sustainability provisions into contracts can be done by considering the International construction documents which are based on industry-prepared standard forms such as FIDIC (International Federation of Consulting Engineers) and JCT (Joint Contracts Tribunal). In fact, clause 4.18 of the FIDIC Red Book is entitled “Protection of the Environment” and states:

*"The Contractor shall take all reasonable steps to protect the environment (both on and off the site) and to limit damage and nuisance to people resulting from pollution, noise and other results of his operations.*

*The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values indicated in the Specification, and shall not exceed the values prescribed by the Applicable Laws."*

This clause shows how important it is to adapt to the local legislation. It also deals with integrating the sustainable aspect when drafting contracts. Nevertheless, it remains vague and needs to be more detailed. In fact, the terms used, such as “reasonable step” and “limit damage and nuisance” are very large. Therefore, these provisions need to be more specific when writing contracts, and need to show quantified information such as the maximum limit that needs to be respected, the values of the Specification, the values prescribed by the Applicable Law... They should also include the use of recyclable material and the in-site recycling requirements.

- Covering sustainable issues in contract clauses can be difficult. As a matter of fact, it is not always easy to define sustainable objectives within contracts. Nevertheless, identifying *key success factors* and applying a sustainable approach to these factors can be very interesting. In fact, a solution can be to determine the sustainable key success factors and set the minimum standards that need to be reached. These standards should consider the market availability, as well as the sustainability level below which we would not consider buying the product or service. It should also be coherent with the standards set by the government. This alternative encourages the suppliers to bid, as the criteria will be more easily addressed. In this case, the suppliers should investigate if the criteria exist in their country and apply them as a

minimum standard accordingly. Define responsibilities and obligations of generated waste management. Moreover, suppliers should make that the sustainability criteria they apply are justified from a legal perspective. In addition, the sustainable objectives for the project should be incorporated into the Supply Chain contract. This requires the different stakeholders working to develop a sustainability plan, the target sustainable measures and the sustainable documentation required for the project.

- Define responsibilities and obligations of generated waste management. In fact, to make a project successful, the owner, contractor, and the different stakeholders who will contribute to the achievement of the objectives should be aware of their responsibilities. Projects cannot be achieved without each of the project participants accepting and understanding their roles and responsibilities. To avoid confusion and misunderstandings, contracts should outline a clear description of the roles. It should also explain the process of waste management, and associate the sustainable objectives to each responsibility. Therefore, defining clearly the sustainable requirements in a contract and appropriately allocating responsibility for the elements necessary to achieve those requirements can greatly reduce the potential for disputes.
- Encourage local provisions and create local employment and business opportunities. As a matter of fact, the economic and social aspects are very important and should be considered when dealing with contracts. Creating local employment by working with local suppliers will also create a circular economy based on local industry. This will not only reduce cost but also ensure the respect of the legal aspect of the project.

#### **Step 4: Selection of the acceptance criteria**

Finally, to evaluate each of the alternatives, a **Multi-Attribute Decision Making** (MADM) was established. Notes from (**Low**) to (**Very high**) were attributed to each alternative. Therefore, the MADM allows having an overview of the different alternatives and which one is more likely to succeed. Only alternatives rated from 3 to 5 will be considered.

	Sustainability provisions	Sustainable issues in contract clauses	Responsibilities of generated waste management	Encourage local provisions
<i>Ease of implementation</i>	High	Low	Medium	Medium
<i>Cost of implementation</i>	Low	Medium	High	Low
<i>Respect law</i>	Very high	Low	High	Very high
<i>Location</i>	Medium	Low	High	Very high

**Table 1:** Multi Attribute Decision Making to evaluate each alternative

Therefore, all these alternatives can be put in place. However, if we had to prioritize, dealing with sustainability issues in contract clauses alternative will be rejected.

## FINDINGS

### Step 5: Analysis and comparison of the alternative

A quantitative analysis is made by giving to each attribute a value depending on the relative option. The cost is considered optimal when low.

Attribute	Ease of implementation	Cost of implementation	Respect of law	Feasibility based on location
Very High/Good/Easy	1	0	1	1
High/Good	0.75	0.25	0.75	0.75
Medium	0.5	0.5	0.5	0.5
Low/Bad/Poor	0.25	0.75	0.25	0.25
Very Low/Bad/Poor	0	1	0	0

**Table 2:** Quantitative representation of the attributes

Then, we apply the relative weighting approach to the feasible alternatives.

Attribute	Sustainability provisions	Responsibilities of generated waste management	Encourage local provisions
Ease of implementation	0.75	0.5	0.5
Cost of implementation	0.75	0.25	0.75
Respect of law	1	0.75	1
Feasibility based on location	0.5	0.75	1
<b>TOTAL</b>	<b>3</b>	<b>2,25</b>	<b>3,25</b>

**Table 3:** Relative weighting

Finally, the **Additive weighting technique** is applied to rank each attribute by importance. Each alternative is compared to the normalized weight of 1, which represents the highest score that should be reached.

We rank the different attributes as following (High importance to low importance):

Respect of law > Cost of implementation > Ease of implementation > Feasibility based on location.

Attribute	Ranking	Weighting	Sustainability provisions		Responsibilities of generated waste management		Encourage local provisions	
Ease of implementation	3	0.3	0.75	0.22	0.5	0.15	0.5	0.15
Cost of implementation	2	0.2	0.75	0.15	0.25	0.05	0.75	0.15
Respect of law	1	0.1	1	1	0.75	0.075	1	0.1
Feasibility based on location	4	0.4	0.5	0.2	0.75	0.3	1	0.4
<b>TOTAL</b>	<b>10</b>	<b>1</b>	<b>TOT</b>	<b>1.57</b>	<b>TOT</b>	<b>0.57</b>	<b>TOT</b>	<b>0.8</b>

**Table 4:** Additive weighting technique

### **Step 6: Ranking of the alternatives**

The Relative weighting analysis shows that the best alternative is encouraging local provisions and creating local employment and business opportunities. In fact, it is better than including sustainability provisions into contracts by 108%. Furthermore, defining sustainability provisions and adding them to contract seems to be a better solution than attributing responsibilities of generated waste management by 133%.

This is slightly different from the result given by the additive weighting technique. As a matter of fact, “Sustainability provisions” is better ranked than the other alternatives. This ranking can be more relied on since “sustainability provisions” is better than “encouraging provisions” by 196%. The third alternative defining responsibilities of generated waste remains the last ranked.

To sum up, we come to the following ranking (from better to worst):

**Including sustainability provisions > Encouraging local provisions > defining responsibilities of generated waste.**

### **Step 7: Performance analysis**

This analysis aims to find the best solutions to create more “green” Supply Chain contracts. As contracts are considered to be a key factor of success in projects, they should be used as an essential and strategic tool in projects, especially when it comes to integrating sustainability.

The different analysis and comparison showed how each solution can benefit the sponsor, especially that the cost and ease of implementation were two main criteria. This will not only create more sustainable approaches in terms of respecting the environment but will also provide more economic and social benefits, as encouraging local business will be done.

## **CONCLUSIONS**

In this paper, we considered whether it is possible to apply a sustainable approach within a contractual framework and we studied the different alternatives that can be adopted within the supply chain industry.

We saw how each solution can be put in place and which one is more adequate and suitable depending on different criteria. We assumed that the respect of law, the cost, the ease and the feasibility of the implementation are the main important factors to consider. The two alternatives that should be adopted are including sustainability provisions in supply chain contracts and encouraging local provisions and employment. These two solutions, when coherent with the standards set by the government, are easy to implement. Nevertheless, depending on the project and the sponsor, creating local business and relying on local provisions can be dropped out. However, it is highly recommended to adopt one of the solutions in order to align with sustainability principles.

Finally, integrating the concepts and procedures of sustainability into the traditional supply chain contracts will combine economic, social and environmental benefits for both the project and the different stakeholders including the project sponsor.

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**Souhaila Bouddou** is a fifth-year student at ITEEM Centrale Lille, an Engineering Management and Entrepreneurship school where the traditional boundaries between the fields of engineering, management and commerce are abolished. She is also pursuing a Master of Science in Project Management in Skema Business School.

Passionate about the subject of Supply Chain in industry, she is specialized in Production Management. She had many experiences in companies such as Tupperware where she did an 8 month internship as a Business Architect Analyst studying Supply Chain in the Production Planning and Control Department, and piloted a European Project, working with people from different countries.

During her education, she had done several internships in Waldner and Adeo, as Project Manager assistant. She has a keen interest in Sustainability and she is certified Green Project Manager by GPM Global. She is also interested in Project Management, and worked on many humanitarian projects in France and Burkina Faso. Souhaila can be contacted at [souhaila.bouddou@gmail.com](mailto:souhaila.bouddou@gmail.com).