Accounting for sustainability through life cycle assessment (LCA)

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Abstract Increasingly, organisations are looking beyond their own operational boundaries to develop strategies to manage sustainability issues along their value chain. A key challenge when accounting for sustainability is the initial identification of which environmental, social and economic issues are relevant, and how these are influenced by stakeholders, policy and level of knowledge. ERM developed a framework to assist organisations in defining sustainability for their products, services or organisation, and in integrating this into their decision-making processes. Based on life cycle thinking, this approach allows one to analyse the relationship between issues in a holistic manner, avoiding the risk of burden-shifting along the value chain and between sustainability impacts. Originally piloted with Sainsbury's, Tesco, Cadbury Schweppes and Duchy Originals, Sainsbury's and the National Trust have used the framework to define and improve the sustainability performance of key products.

1 Introduction

Achieving sustainability may be the greatest challenge of the 21st century. Yet organisations have difficulty in turning rhetoric into reality. Many lack the systems, tools and skills to implement fully their good intentions, and to report and evaluate their performance [1]. ERM was commissioned by His Royal Highness (HRH) The Prince of Wales' Accounting for Sustainability project to address this challenge and to help organisations integrate sustainability into their decision-making. ERM worked with stakeholders to develop a sustainability assessment framework and model, which uses life cycle thinking and risk ratings to understand the current barriers and enablers for improving sustainability performance of a product or service. The framework uses a combination of techniques, including desk-top literature review and stakeholder engagement, in

addition to both quantitative and qualitative analysis, which allows a wealth of varied information to be synthesised in a practicable format better to inform decision-makers.
The method demonstrated in this paper illustrates how a framework can be developed to help organisations – large and small – to understand and improve the sustainability of their products and services.

2 Approach

Sustainability is increasingly one of the key components of delivering a product to market. Improving sustainability across a product's life cycle creates opportunities for enhancing the viability and attractiveness of the product to consumers. This framework aims to embed sustainability in business processes and promote innovation through three phases.

- Phase 1: Identify the main sustainability issues for a product or service range throughout its life cycle, including how important the sustainability issues are to stakeholders.
- Phase 2: Prioritise the environmental, social and economic impacts and benefits of a specific product through a risk rating process, and monitor change in performance.
- Phase 3: Provide the business case for acting on the product's or service's sustainability issues.

2.1 Phase 1: Identify the main sustainability issues

Gaining a greater understanding of the main sustainability issues affecting an organisation will help to strengthen overall sustainable development strategy and policy by highlighting areas that could be improved upon. This phase of the method aims to map the life cycle of the product or service as well as to identify key sustainability issues, stakeholders' expectations, and internal and external standards that address the issues. The information from these steps is collated and compiled in a risk matrix designed to prioritise issues. Figure 1 summarises the method for Phase 1 and is followed by detail for each step. Figure 2 provides a sample output of the risk matrix.

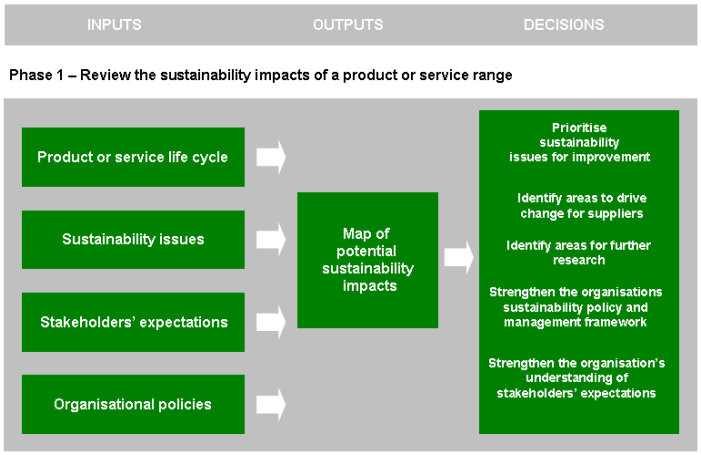

Fig.1: Phase 1 summary

2.1.1 Step 1: Map the life cycle and associated sustainability issues

The first action for an organisation is to identify the relevant life cycle stages of the product or service in question along the entire value chain and the associated sustainability issues at each phase. This mapping is done through inter-company dialogue with relevant staff, often, but not limited to, sustainability managers, buyers, product developers, suppliers, operational managers and relationship managers. A high-level desktop review is also important to confirm internal opinion is robust and to draw from lessons documented in published studies. The information collected during this step may be from expert opinion, quantitative life cycle data or qualitative information for issues more difficult to measure. As with all research, higher quality data will enable higher quality results.

For some organisations with diverse portfolios, it may be most useful to commence this process with a review of their products or services to understand which ones may have the largest impact. Products or services may also be selected based on stakeholder interest, brand or reputational issues or financial metrics such as sales or profitability.

2.1.2 Step 2: Assess stakeholders' expectations

The relevance of the main sustainability issues identified across the life cycle is then assessed against stakeholders' expectations of these issues. This aims to assess material sustainability issues and to understand how external pressures impact on a product or service category across its life cycle. Stakeholders may

include investors, suppliers and regulators, amongst others, but also consumers and the public. Information for this step can be collected through review of published reports or face-to-face and electronic (i.e telephone and email) communication.

2.1.3 Step 3: Review internal and external sustainability standards

The organisation's overall sustainability strategy and objectives need to be reviewed within the context of the issues and stakeholder opinion identified in the earlier stages of this phase. This is to identify whether existing standards align or whether there may be gaps. This step requires the identification of internal company policies and practices that may have a mitigating effect on the sustainability issues identified in Steps 1 and 2, to what degree they are working, and any external standards in place.

2.1.4 Phase 1 risk matrix

The inputs of this phase are the cornerstone of information for the method and will ultimately drive the overall sustainability rating. The risk matrix aims to prioritise sustainability issues for a product or service that one may want to consider improving, which may include further research or identification of what needs to be discussed with relevant suppliers.

The matrix is designed to quantify risks, but could equally be used to identify opportunities. In the worked example in Figure 2, opportunities are captured only in a qualitative form.

The calculations used to assess the risk are individual to each company and based on a weighting assigned to each factor in steps one, two and three. The weightings used for the pilots are confidential and were based on published methods and stakeholders' opinion.

ISSUES	STEP 1			Step 2		Step 3		RISK
Sustainability issue	Relevance to product	Life cycle stage(s)	Benefits	Is there stakeholder demand?	Is there consumer demand?	Existence of external standards	Effectiveness of internal standards	Rating
Environment								
Climate change	High	All		Yes	Yes	Yes	Low	High
Water use	Low	Use	Water savings	No	No	No	Medium	Low
Other	High			No	Yes	No	High	Medium
Social								
Labour rights	Medium	Raw materials, production		No	No	No	Medium	Medium
Working conditions	Medium	Raw materials, production		Yes	Yes	Yes	High	High
Economic								
Profitability	High	All	High market demand	No	Yes	No	Medium	High
Market share	Medium	Retail		No	Yes	Yes	High	Medium

Fig.2: Phase 1 risk matrix example

This phase provides a high level sustainability assessment of a product or service that allows an organisation to strengthen their knowledge and enable them to look more closely at the product or service on a supplier by supplier basis. This is detailed in Phase 2. The results of this Phase can identify specific areas of the supply chain that may require action or stakeholder engagement, areas for further research, increased understanding of stakeholder expectations and an increased understanding of applicable internal and external standards.

2.2 Phase 2: Prioritise issues

The second phase of the method has been developed with stakeholder groups made up from large retailers such as Sainsbury's, Tesco, Cadbury Schweppes and Duchy Originals. Due to large and often complex supply chains, it is often not feasible for an organisation to assess all issues at once. The aim of Phase 2 is to conduct a more detailed assessment of the key sustainability issues, life cycle stages and stakeholder expectations for a specific product or service. This may include looking at just one supplier or a group of suppliers who provide the same service. A summary of the Phase 2 method can be found in Figure 3.

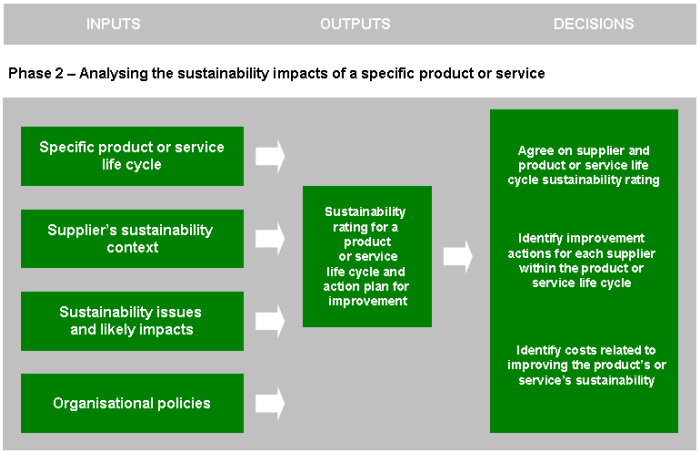

Fig.3: Phase 2 summary

This phase aims to identify factors in the local operating context that may increase or decrease the sustainability impact, e.g. extracting water in a water stressed or water-abundant area. Detailed supplier performance information is required to develop an action plan with options to improve sustainability performance where it is most needed as well as to learn from best practice examples.

The outputs of Phase 2 include a performance rating to reflect the product or service sustainability quality. This can be used to highlight areas of concern or as the basis for improvement action plans. As with Phase 1, a weighting is assigned to each element to indicate the importance of each in the decision-making process. Figure 4 provides a sample matrix. Phase 3 includes a method to assess the cost implications.

ISSUES	Impact on:				Likelihood of impact			Quality of management			RISK
Sustainability issue	Local Environment	Workers	Community	Consumers	Short-term	Medium-term	Long term	Policy	Performance	Stakeholder engagement	Rating
Environment											
Climate change	Medium	Low	Medium	Low	No	Yes	Yes	Low	Medium	Low	Medium
Water use	High	Low	High	Medium	Yes	Yes	Yes	Medium	Medium	Low	High
Other	Low	Low	Low	Low	No	Yes	No	Low	Low	Low	Low
Social											
Labour rights	Low	High	High	Medium	No	Yes	Yes	Medium	Medium	Medium	Medium
Working conditions	Low	High	High	Medium	No	Yes	Yes	Medium	Medium	Medium	Medium
Economic											
Profitability	Low	High	High	Medium	Yes	Yes	Yes	High	High	Medium	High
Market share	Low	Medium	Low	Low	Yes	Yes	Yes	Medium	Low	Low	Medium

Fig.4: Phase 2 risk matrix example

2.3 Phase 3: Provide the business case

Organisations use many different methods to decide what products and suppliers to use and how to rate their performance; however, these are often based on similar core principles. The third phase, summarised in Figure 5, integrates the information collated about the product or service and associated suppliers into the commercial decision-making process with the goal to enable an organisation to sell better products, select innovative suppliers or those with best practices and encourage sustainable consumption.

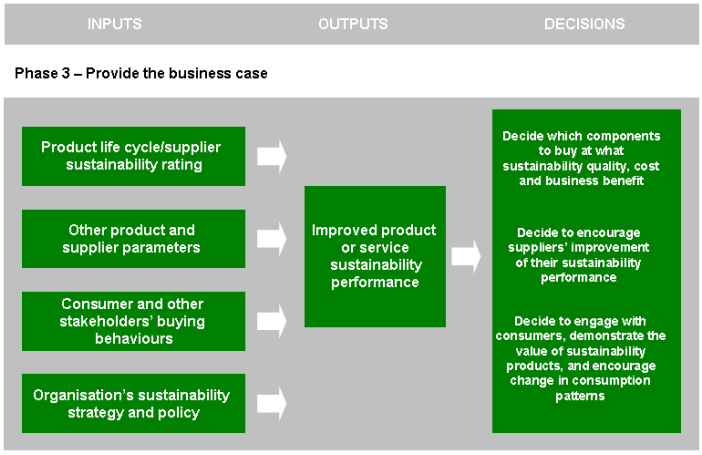

Fig.5: Phase 3 summary

Traditional financial performance metrics such as margin, cost and market share can be used as key performance indicators alongside the sustainability performance metrics calculated in Phase 2 - effectively embedding sustainability into the decision-making process. The use of qualitative information is acceptable during initial assessments when testing the method; however, the intention should be to collect, and continuously improve, current and relevant quantitative data in order to produce meaningful outputs. Figure 6 presents a sample matrix for Phase 3.

Supplier comparison	Risk and improvement plans						Business metrics							Buyer's decision
	Risk (Phase 2)	Number of supplier actions	Cost	Number of buyer actions	Cost	Revised risk	Margin	Cost	Availability	Sustainability	Sales	Product quality	Support policy	
Supplier A	Medium	4	Medium	2	Medium	Low	1	3	1	1	2	1	2	Increase share
Supplier B	High	1	Low	1	Medium	Medium	2	2	2	3	2	2	1	Monitor
Supplier C	Low	3	High	2	Low	Low	3	1	2	2	2	3	3	Decrease share

Fig.6: Phase 3 supplier comparison matrix

A system to weight and compare the risk and business metrics between the suppliers is used. Equal weighting could be provided to all factors or they could be distributed according to the level of interest or concern for each (e.g. based on investor or shareholder interest etc). The final column is intended to provide a simple supplier comparison to enable a buyer from an organisation to decide whether to continue the relationship, monitor for improvement or discontinue.

3 Conclusions

Many organisations do not understand what sustainability means to their products and services. This framework has been developed to assist organisations to understand sustainability and to embed it into their decision-making processes. The method allows one to focus on the value chain of their products, which can be empowering for an organisation that is struggling to understand what sustainability entails. The use of life cycle thinking and life cycle data, where available, helps provide a strong evidence base for decision-making. The use of traditional LCA techniques is often viewed as daunting for businesses in terms of process and resources. This framework allows organisations to realise the benefits of holistic life cycle thinking in a readily digestible form to simplify the business case proposition. It is recommended that this method is adapted for different organisations in order to build on synergies with existing initiatives and include factors unique to the organisation.

4 References

[1] <http://www.sustainabilityatwork.org.uk/>, (Accessed 11.04.2011).