

# Value Chain Analysis as tool for sustainable value creation

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## ABSTRACT

Modern agriculture is under pressure. A decline in soil fertility and biodiversity, water scarcity in many regions, and the severe poverty among 25% of the world population are exemplary for this pressure. Agriculture provides more than two third of Unilever's raw materials. The search for a more sustainable way forward resulted in Unilever's Sustainable Agriculture Initiative in 1998. The initiative's objective is to ensure the continued availability of Unilever's key raw materials by defining and adopting sustainable agriculture practices in the supply chain.

Within the Sustainable Agriculture Initiative, value chain analysis was recently initiated. By defining the primary value activities throughout the whole chain and subsequently analyse the costs of each step, ways to create a surplus value for consumers and receive a price premium for the unique product can be discerned. By interpreting "value" in new ways, i.e. not only in economic terms but also in terms of social and nature values for various stakeholders, new insights can be gained. How is non-economic value generated? How are these processes managed? Can we translate this to brands?

**Keywords:** sustainable agriculture, value chain analysis, sustainable sourcing, food industry

## INTRODUCTION

Modern agriculture is under pressure. Biodiversity is declining at a fast pace; "in the past century some 75% of the genetic diversity of crop plants has been lost. ... About 24 per cent of mammals and 12 per cent of bird species are currently considered to be globally threatened" (WEHAB, 2002a: 7). Biodiversity contributes to food security, health improvements, income generation, vulnerability reduction and ecosystem services, such as water generation and erosion prevention (WEHAB, 2002a: 8). Soil degradation is severe; "nearly 40 percent of the world's agricultural land experiences serious productivity reductions due to soil degradation, which rates up to 70 per cent for some regions. ... Of the 260 million hectares of irrigated land world-wide, 80 million hectare are affected by salinisation – a concentration of salt in the soil surface that severely reduces soil fertility" (WEHAB, 2002b:7). Agriculture uses 70% of all fresh water sources in the world (WEHAB, 2002b:7), while 40 per cent of the world's population experiences water scarcity (WEHAB, 2002c:7). Of the 1.2 billion people living in extreme poverty, approximately 900 million live in rural areas; they are therefore highly dependent on biodiversity for their livelihoods and are most severely affected by biodiversity loss, water pollution and land degradation.

These pressures on agriculture have a direct impact on Unilever, as agriculture provides over two third of our raw materials. Therefore, since the mid-1990s, Unilever has been consulting with experts and engaging with suppliers, customers, consumers and business partners around the world to find a more sustainable way forward.

## UNILEVER'S SUSTAINABLE AGRICULTURE INITIATIVE

We are among the world's largest users of agricultural raw materials. Unilever's aim is to meet the everyday needs of people everywhere. This can only be achieved and maintained in the long term if our actions are determined by the broader principles of sustainable development. This means we must align our economic goals with the social and environmental consequences of our work.

These developments and insights resulted in Unilever's Sustainable Agriculture Initiative in 1998. The initiative's objective is to ensure the continued availability of Unilever's key raw materials by defining and adopting sustainable agriculture practices in the supply chain. In co-operation with a wide diversity of stakeholders, sustainable agriculture was defined as:

*Sustainable agriculture is productive, competitive and efficient while at the same time protecting and improving the natural environment and conditions of the local communities.*

Our approach to the Sustainable Development of Agriculture is to support the following principles:

- Producing crops with high yield and nutritional quality to meet existing and future needs, while keeping resource inputs as low as possible
- Ensuring that any adverse effects on soil fertility, water and air quality and biodiversity from agricultural activities are minimised and positive contributions are made where possible.
- Optimising the use of renewable resources while minimising the use of non-renewable resources
- Sustainable agriculture should enable local communities to protect and improve their well-being and environments

Based on these four principles, 10 sustainability indicators were developed in a process of stakeholder consultation: soil fertility and health, soil loss, nutrients, pest management, biodiversity, product value, energy, water, social capital and local economy. Subsequently, five key crops were selected on the basis of their strategic importance to Unilever and on the extent to which we could exert some direct influence. In practice, crops grown at Unilever plantations or grown under contract farming were selected. Currently, pilot projects are established in 11 countries around the world: peas in the UK; spinach in Germany and Italy; tea in Kenya, India and Tanzania; palm oil in Malaysia and Ghana; and tomatoes in Australia, Brazil and California.

The objective for all projects is to:

- Identify, for each of the ten sustainable agriculture indicator clusters, the parameters relevant to the local situation, in which local growers and planters, local NGOs, research institutes and sometimes community groups are involved.
- Identify which agriculture management practices will influence these parameter values.
- Implement changes and improvements to agricultural practices to drive the parameters into the right direction.
- Collect and write down the new set of agricultural practices in a "sustainable agriculture good practice" document for the crop in question.

So far, good practice documents or sustainable agricultural guidelines have been produced for tea and oil palm. Documents for peas, spinach and tomatoes are expected late 2002. The next large challenge is to roll out these guidelines for the five participating crops and incorporate more crops in the programme.

## **FROM VALUE CHAIN ANALYSIS TO SUSTAINABLE SOURCING**

In order to make sustainable agriculture successful, market mechanisms that favour sustainable agriculture should be promoted. Buyers should get convinced that sustainable sourcing is attractive. Value chain analysis can help to discern ways to create a surplus value for consumers and to receive a price premium for a unique product, which is called differentiation by Porter (1985). In order to support the strategic need for sustainable sourcing Unilever has asked the strategic management institute IMD in Lausanne to develop a 'sustainable sourcing tool' based on value chain analysis.

The purpose of value chain analysis is to analyse what values for consumers and other stakeholders are being created in what part of the value chain at what costs and how the creation of these values help differentiate the product from other products. A typical agriculture based product consists of many value chain activities, the most important being primary production of the raw material, one or more production steps, marketing/sales, advertising, retail and several logistic steps in between, such as transport, warehousing, and selling/buying by auction. The price for the end consumer is the result of costs and margins in the different value chain activities. The value produced for consumers and other stakeholders is the result of how the value chain activities are being managed along the entire value chain. The art of sustainable supply chain management is to find changes in the supply chain that create new value to consumers and other stakeholder and at the same time helps manage cost appropriately. For example, changing from buying at auctions to direct buying is one way of getting better control over the raw material's sustainability and can also contribute to better cost control and even cost reductions.

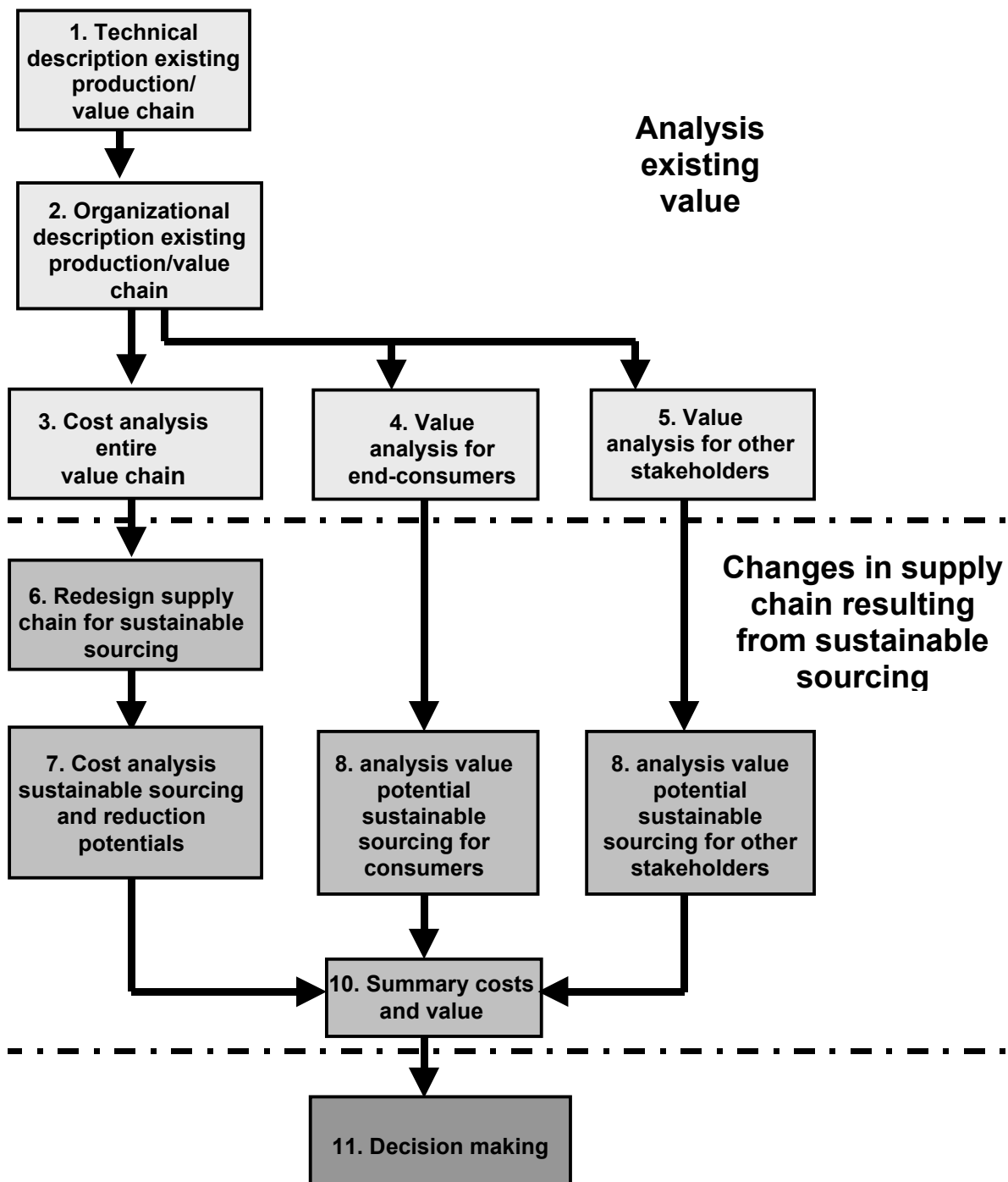
Figure 1 shows the eleven steps of a value chain analysis for sustainable sourcing as developed by IMD, based on the principles of Porter's (1985) value chain analysis. In the first five steps, the existing value chain for a product is being analysed. From this analysis it becomes clear what value the product is delivering (or failing to deliver) to consumers and stakeholders. The second five steps deal with the introduction of sustainable sourcing and implementation of additional changes in the supply chain. These second five steps make clear how sustainable sourcing can be introduced in a way that contributes best to the increase of value and product differentiation.

### **Value chain analysis**

**1. Technical description of the existing value chain.** This step results in a flow diagram of the main value activities and inputs and outputs of all relevant processes.

**2. Organisational description of the existing value chain.** Here, the main actors in charge for each value activity, other influencing actors for each value activity and the control over each value activity needs to be mapped.

**Figure 1:** value chain analysis for sustainable sourcing: 11 steps



**3. Cost analysis of the entire value chain.** All value activities and sub-activities need to be made transparent. Clearly, cost analysis of the activities outside your own direct control, such as farming, is far more difficult than cost analysis of your own activities.

***Consumer and stakeholder value***

Step 4 and 5 are a value analysis for end consumers and other stakeholders. First, these analyses require some background information on the way consumer and stakeholder value can be measured. Sustainable sourcing can lead to differentiation.

Differentiation allows the creation of unique sources of value for consumers and other stakeholders. Differentiation makes it possible to demand a price premium, to sell more product at a given price and/or to gain benefits such as increased consumer loyalty. Differentiation leads to superior performance if the premium exceeds the added costs for being unique. Differentiation is the result of the co-ordinated actions of the entire company, not just marketing. Differentiation does not bring any advantage, unless it creates value for consumers and/or other stakeholders. Differentiation should therefore be based on the criteria that consumers and other stakeholders use for defining the value of the product and the related value chain.

#### *Value creation for consumers*

In order to understand the existing sources of differentiation and possibilities of improved differentiation, we have to understand what consumer's buying criteria are. Porter (1985: 142) distinguishes two types of criteria:

- *use criteria* are specific measures of what creates buyer value. They are linked to the specific product. They include price, different specific product characteristics - such as nutritional value, taste and colour - and unit size. Increasingly, they include criteria that are linked to the 'history' of the product, such as sourcing policy and organic standards.
- *signalling criteria* are not immediately linked to the characteristics of the single product, but rather to confidence in the firm or in the brand that it will meet their requirements. A consumer uses signalling criteria to develop a feeling about whether a firm will lower its costs or improve its performance. Signalling criteria may include such things as packaging appearance, brand advertising, company reputation and consumer reports.

#### *Value creation and destruction for other stakeholders*

The value chain does not only produce value for consumers. It produces (or destroys) value for a number of other stakeholders as well. A supply chain that optimally generates value for the consumer may destroy value for other stakeholders, such as environmental NGOs or investors. If the production of oil is linked to the public issue of habitat destruction, the value chain does not produce positive value for the associated issue groups. Such issue groups might influence the specific company's reputation, investor behaviour and finally consumer behaviour. In analogy to consumer use and signalling criteria, we can define use and signalling criteria that define the value a product creates (or destroys) for external stakeholders.

- *use criteria* are directly related to the specific product and the associated value chain, such as product's contribution to global warming, support of smallholders, or avoidance of child labour.
- *signalling criteria* refer to policy and management systems regarding sustainability, such as ISO-14001, compliance with legislation and audits of labour practice, and environmental ratings, ranking by ethical investment funds, company's codes of ethics, etc.

**4. Value analysis for end-consumers.** This steps requires first an analysis of the buying criteria for consumers and how these criteria contribute to the uniqueness or differentiation of the product. The uniqueness of a teabag is for example determined by the use criteria 'taste', 'colour', 'brightness', 'mouth feel' (thickness) and 'functionality' (infusion time), and by the signalling criteria 'packaging appearance', 'brand advertising' and 'company reputation'. Subsequently, the strength of the relationship between each value activity and the value

created by the use and signalling criteria should be assessed. The use criteria ‘taste’, ‘colour’ and ‘brightness’ of the teabag are for example strongly related to the primary production of tea at the tea estate. The signalling criterion ‘company’s reputation’ is for example somewhat related to many activities in the value chain: the primary production at the tea estate, the tea processing at the factory, the final processing and packaging, the marketing and sales, the buying at the auction; and strongly related to the company’s corporate policies and communication. Finally, the level of control over the value activities will be determined, varying from ‘in control’ (defined and managed) to ‘not in control’ (undefined or unmanaged). The use criterion ‘tea bag functionality’ is for example clearly defined and fully managed at the value activity ‘innovation/R&D’.

**5. Value analysis for other stakeholders.** First, the main issues for the various stakeholders for the specific product need to be mapped. For environmental NGOs, these issues for agricultural products are for example biodiversity, water scarcity, soil erosion, pesticide use and genetic modification. For social NGOs, the issues are for example child labour, treatment of workers and fair trade. With this mapping, the next step is already partly covered, viz. the analysis of the use criteria for stakeholders. The other part is the mapping of the signalling criteria for stakeholders. Examples are company environmental reports, policies and systems, and company rankings by other groups. Subsequently, an assessment needs to be made of how these criteria contribute to the uniqueness or differentiation of the product. As in step 4, the strength of the relationship between each value activity and the value created by the use and signalling criteria should then be assessed. The use criterion ‘environmental impact of raw materials’ (biodiversity, water scarcity, soil erosion, pesticide use) for example, is strongly related to the value activity ‘primary production of these raw materials’, and the signalling criterion ‘environmental and social reports’ is for example strongly related to the value activity ‘corporate policies and communication’. Finally, the level of control over the value activities will be determined, varying from ‘in control’ (defined and managed) to ‘not in control’ (undefined or unmanaged). The level of control of the use criterion ‘environmental impact of raw materials’ is for example dependent on who owns the the primary production activity. For tea and palm oil for example, Unilever owns plantations, and therefore has a high level of control.

### **Redesign supply chain for sustainable sourcing**

Steps 6 to 10 focus on the design of the actual transition towards sustainable sourcing.

**6. Redesign supply chain for sustainable sourcing.** Here, the need and subsequent development of redesigning the supply chain as a result of the value chain analysis is assessed. First, the criteria for sustainable sourcing and the affected value activities need to be established. This provides insight in the required changes in the organisation of the supply chain. A sustainable sourcing criterion might be for example a high level of control over the sustainability performance of the purchased raw materials. The consequent change in the organisation of the supply chain might then be moving from buying at the auction to direct buying from sustainable farms or plantations.

**7. Cost analysis sustainable sourcing and production potentials.** The cost effects of the redesign of the supply chain – both positive and negative – need to be estimated. At the value activity ‘primary production’ for example, cost savings might be realised as a result of water, energy and pesticides use decrease. At the same time, sustainable agricultural practices might increase costs in terms of management, research and control. Also additional changes in the value chain that can contribute to cost savings need to be assessed. The improvement of the

organisation of the value chain can reveal untapped potentials for cost savings with no direct link to sustainable sourcing.

Step 8 and 9 focus on the actual value creation for consumers and other stakeholders as a result of sustainable sourcing. In these steps, tackling the pressures facing agriculture today, such as biodiversity loss, soil degradation and water scarcity, needs to be translated into real consumer or stakeholder value.

**8. Analysis value potential sustainable sourcing for consumers.** For each use and signalling criterion, as determined in step 4, the additional value created as a result of the redesign of the supply chain, needs to be assessed. A premium price for a branded product based on sustainably sourced raw materials is an example. For some of the buying criteria, such as ‘company reputation’, it is more difficult to express this value in hard financial terms. Therefore, an overview of the buying criteria and an indication of their value suffice.

**9. Analysis value potential sustainable sourcing for other stakeholders.** Here, the same is done for stakeholders; assessing the additional value created as a result of sustainable sourcing for the use and signalling criteria of stakeholders, as determined in step 5. To express this value in hard financial terms will be very difficult most of the times. Therefore, here as well an overview of the use and signalling criteria and an indication for their value suffice. Sustainable sourcing might for example have a positive value for environmental groups as it reduces global warming by using less or sustainable energy.

**10 Summary costs and value.** In this step the results of the value chain analysis need to be summarised:

- the criteria applied for sustainable sourcing;
- the proposed changes in the organisation of the value chain;
- the costs and value creation for both consumers and stakeholders;
- the attractiveness and feasibility of the proposed changes.

**11. Decision making.** Finally, based on the results of the value chain analysis a decision on which changes are needed for sustainable sourcing needs to be made.

## RESULTS

Within the Sustainable Agriculture Initiative, Unilever recently went through this value chain analysis in a workshop which a multidisciplinary representation for each of the five key crops that are involved in the programme. This workshop delivered interesting results. First of all, getting all data in place to make a profound value chain analysis required quite some effort, time and input of different people. The required data for a value chain analysis is often not readily available at one place in the company. The joint effort to retrieve the data can have positive side-effects, such as revealing current inefficiencies or increasing overall insights in the supply chain.

Second, for all five crops it was concluded that sustainable sourcing is not expected to lead to overall cost increases. Redesigning the value chain for sustainable sourcing provides overall more cost saving possibilities than cost increases. This means that sustainable sourcing is a viable way forward for Unilever.

Third, the sustainable sourcing strategies for a specific crop are ultimately dependent on the complexity of the supply chain. This complexity can vary widely for different crops. Spinach, one of the agricultural raw materials for Unilever's frozen vegetable business, for example, is grown by a manageable number of contract farmers who work against Unilever's sustainable agriculture guidelines. This structure makes the supply chain relatively simple. Tea for Unilever's Lipton brand, on the other hand, is supplied for a very small part by Unilever owned plantations, and for the main part bought on auctions all over the world in small quantities of one tonne. These auctions are supplied by over 2 million smallholders, of which the specific quality of their tea is important for the quality of the final tea blend. Obviously, this supply chain is highly complex with accompanying consequences for sustainable sourcing. Therefore, sustainable sourcing requires intelligent management, knowledge and knowledge transfer. The main challenge is open and clear communication throughout the entire value chain.

## **CONCLUSION**

Porter's value chain analysis is a suitable tool for sustainable value creation. In only a few steps of the value chain, sustainable value can be either generated or destroyed. As a prerequisite for tracing this value, the sustainable values of consumers and stakeholders need to be revealed and quantified. Subsequently, the way sustainable sourcing is managed is dependent on the complexity of the supply chain. This complexity is threefold. First, the sustainable consumer and stakeholder values are quite intangible. Second, value drivers need to be understood well. And third, the supply base itself can be rather complex. This level of complexity provides the boundaries of the chosen sustainable sourcing strategy, which can vary between 100 per cent sustainable sourcing to a gradual transition towards sustainable sourcing.

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