

## CROSS-SECTORAL

# Sustainable value system approach to cope with climate change

Naim Kenan Hacievliyagil and Meindert Boorsma

The demands for the reduction of polluting emissions like carbon dioxide can create serious threats or opportunities to a company. It is imperative to approach this issue from the perspective of a sustainable value system.

Climate change, one of the highest environmental concerns in the developed countries, pose a set of new problems. It is described by some as the most serious challenge mankind ever faced. Both public policies to battle against it and the public reaction signal the advent of a new economy in which carbon dioxide emissions will be limited.

Even when climate change is left aside, we are shifting towards a carbon constrained world because of the rising oil prices and the energy policies in the western world. The main driver of this shift is intensifying public concern on climate change. The impending carbon economies can have a great impact on business practices of companies and industries. Even competitive positions can change dramatically depending on carbon emissions of companies and their stakeholders. In this environment, companies need a perspective to shape and adapt their strategy and actions to survive.

## Taking stakeholders into account

Mark Zegveld (2004) considers the company as 'the dynamic result of interactions between the different core stakeholders', which are partners, capital providers, employees and customers. He sees governmental influence as an environmental factor. We prefer to consider it as a stakeholder when his role is highly important as in the case of climate change. The strategic behaviour of companies is influenced by the interaction of the company with its stakeholders. In times of drastic paradigmatic changes, the dynamics of these relations will be affected deeply and the value networks will be reshaped. To get prepared for this new paradigm and to be able to cope with this

need for change companies should assess their current company position in relation with their stakeholders positions as a first step to a new future.

Developments for each stakeholder have some salient features for a company active in the European Union. Firstly, from a governmental perspective, the scope of existing mechanisms to reduce carbon dioxide emissions of the major sources is enlarging. For instance the second phase of the European Union Emission Trading Scheme, the largest multi-national emissions trading scheme in the world, started by the beginning of 2008 with the addition of new industries and countries.

Secondly new regulations and charging mechanisms are being developed to reduce emissions in the industries not in the scope of existing regulations. The content of these regulations are not yet known completely apart from the huge impact they will have on businesses. For example many countries are discussing the reduction of greenhouse gases in transport by charging new taxes on fuel and vehicles. Regardless of the mechanism, the main philosophy behind the European regulations is to internalize externalities, which implies whoever emits carbon dioxide will be charged proportionally to the amount of its impact on the environment.

From customer perspective, in both business-to-business and business-to-consumer segments, customers are highly aware that the most value of a product is created before production. It means that the social impact, including environmental impact, is preferably integrated in this value. In that respect, customers expect brand-owners to bring products

on shelves through more sustainable and socially responsible networks and supply chains. Besides these expectations, savvy public activists scrupulously monitor companies' practices and publicize misdeeds through different media notably the internet. In the business-to-business market, companies implement green-procurement policies and audit the suppliers and even the suppliers' suppliers.

**The amount of capital devoted to sustainable business practice is escalating.**

The position of capital owners is not too different than customers. To achieve sustainability, investors expect as customers that companies do influence their network to reduce the environmental impact of their production and distribution. Alongside demanding more environmental responsible company networks, the amount of capital devoted only to sustainable business practices is escalating.

Government, capital owners and customers are putting a lot of pressure on companies. Different than them, employees and partners are not pushing but they are affected by the second wave of pressure on companies. Apparently some of this pressure will be directed to the employers. For instance at TNT, a global express and mail delivery services company, employees are at the core of sustainability activities. TNT tries to lead them to live in a more sustainable life-style. In this regard they are offered incentives and trainings to reduce personal environmental impact. Imagine also the impact this has on the employees own consumer behaviour affecting other consumers as well.

## Sustainable value system

In this context, companies need to adopt an

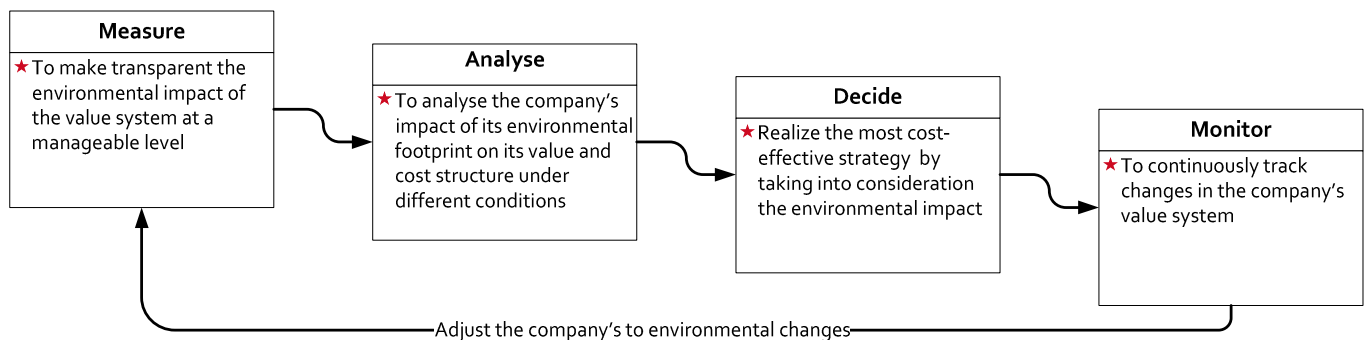


Fig. 1 | The four management activities of the sustainable value system approach

approach considering all relations with key stakeholders. Thus far concepts are offered to deal with companies' responsibility out of its borders such as green supply chain management (Srivastava 2007) and sustainable supply chain management (Linton, Klassen and Jayaraman 2007). These concepts include external parties to reduce environmental impact. However they suffer from scope narrowness to cope with the shift towards the reduction of carbon dioxide emissions. Moreover they are operation oriented and approaching the business dimensions just from a cost perspective, ignoring value aspects.

### The concept of sustainable value system can be used when business face environmental challenges.

To cope with upcoming business uncertainties associated with severe environmental threats we propose a generic approach. Our concept of sustainable value system (SVS) borrows from the value system notion of Michael E. Porter (1985). It is generic because it can be used when business faces environmental challenges different than climate change. The approach suggests a system perspective to deal with sustainability related challenges. Instead of separately looking at every chain and link in a value system and optimizing them independently, we propose to optimize the complete system. To do so the SVS approach relies on four main management activities: measure, analyse, decide and monitor.

To measure implies to make transparent the environmental impact of the value system at a manageable level. In this regard, companies should determine the system boundaries to be

analyzed. Boundaries to be selected should involve most critical parts of the value system; but it should not be so wide that it can't be managed. The boundaries also include finding the proper limit of environmental dimensions to be analyzed, for instance emissions in water, soil, air, waste, etc. After delineating the boundaries, the company should quantify the environmental impact created in each value chain in the value system and in each link in its value chain. This can be seen as an environmental footprint of the value system. Besides this the value creation and cost incurred in these links and chains should be drawn out.

The company should analyze the impact of its environmental footprint on its value and cost structure under different conditions. For instance, if there is an impending charge for a specific emission, the company should analyse its impact on its different costs for different charging rates. Otherwise the results of any environmental friendly shift should be analyzed in terms of benefits such as higher sales, increases in product or brand value. An analysis linking environmental impact to financial terms can support strategic decisions of a company.

The consequences of possible strategies in terms of environmental impact can be assessed with an SVS approach. For instance as a strategy a company can shift to low-cost leadership. In this respect sourcing the company with relatively cheap raw materials can be an option to realize the strategy. Nevertheless the cheap raw materials might entail a higher impact on environment in the value system of the company. So the paradigm which seems a more cost-effective can turn into a more costly structure with possible charging on environment impact or loss of sales due to increasing environmental irresponsibility.

In addition the company's sustainability strategy can be shaped based on this analysis. Environmentally weak chains can be identified and the outcome of possible improvements over the complete value system in these areas can be investigated. In this way the possible improvements can be prioritized and the scarce resources, assigned business-wisely. By using the SVS analysis, the company can decide how to act in this environment and how to improve its performance.

To monitor implies the continuous track of the value system changes. This action is essential because of the value system's dynamic context and to fulfil stakeholders' needs. The environmental performance of a value system is not completely under the control of one company. The decisions and actions of other parties can change the environment impact of a value system. Furthermore the assumptions made to determine value system boundaries and analysis level might change in the course of time with new information and knowledge on environmental issues or changing political approaches. Besides these stakeholders such as customers, investors and occasionally governments demand to know environmental impact and performance of the company. Considering these the company should develop a system to monitor its environmental impact and to communicate the performance improvements to stakeholders.

The environmental performance of a value system is not completely under the control of one company.

### Application to transportation

Binnenlandse Container Terminal Nederland (BCTN) recently decided to understand more about carbon emissions and to challenge new opportunities in the market. The company is active in distribution and transport business by managing four container terminals in the Netherlands. It transports 350,000 twenty-foot equivalent units per year, which constitutes ten per cent of the Dutch container transport. As a component of the intermodal transport value system, BCTN believes that intermodal transport is more efficient than other single modes. Recently it also feels the pressure from its customer to expose its environmental impact in terms of green-house gases. In this context BCTN contacted Intelligence for Business to measure its environmental impact, to compare it with other modes of transport and to identify opportunities and threats with impending business context to carbon constraining developments.

To resolve these issues, we analyzed the value system of and identified the part of value system which can be influenced by BCTN. We focused on global warming impact of the determined value system level. Following that

we made the carbon footprint of the value system based on the SVS model. The emissions were distributed over the value system and lowest performing links in the value system were identified by using value system specific key performance indicators. Possible effects of different environmental charges on BCTN business were analyzed under different scenarios. BCTN's strategic decisions were re-assessed. In the course of the analysis, we identified operations that can be further optimized to reduce cost and environmental impact. Currently Intelligence for Business and BCTN are developing a program to reduce overall environmental impact of BCTN's value system with the cooperation of other parties involved in the system. Moreover BCTN consider developing an integrated system to monitor its value system's green-house gas impact on a daily base.

To sum up, the demands of stakeholders and the dynamic structure of environmental challenges make it imperative to approach the issue from a system perspective. The approaches that focus on specific parts of a system can entail successful results for the given part but might cause higher environmental

impact in the different parts of the value systems or extra financial costs. In this regard, we suggest the SVS approach to managers when they have to face environmental challenges that can affect their business deeply. ★

### References

- Linton, J.D., Klassen, R., and Jayaraman V. (2007), 'Sustainable supply chains: An introduction', *Journal of Operations Management*, 25 (6): 1075–82.
- Porter, M.E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance* (New York: Free Press).
- Srivastava, S.K. (2007), 'Green Supply-Chain Management: A State-of-the-Art Literature Review', *International Journal of Management Reviews*, 9 (1): 53–80.
- Zegveld, Marc A. (2004) 'The productivity and governance of company-specific knowledge', *International Journal of Learning and Intellectual Capital*, 1 (3): 317–33.

### About the authors

Naim Kenan Hacıevliyagil is management consultant at Intelligence for Business, Veenendaal, the Netherlands. Email: <naim@i4b.nl>

Meindert Boorsma is a partner and managing consultant at Intelligence for Business, Veenendaal, the Netherlands. Email: <boorsma@i4b.nl>