

Sustainable Business Management: Conceptual Framework and Application

Dr. Rupert J. Baumgartner

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Introduction

Business is characterized by an increasing complexity, high intensity of competition, less stable market conditions and raising public interest on environmental and social problems. In order to manage these challenges, the concept of Sustainable Development gives a general framework. It is a macroeconomic concept and is rarely discussed on the level of companies and business processes. In this paper the concept of Sustainable Development for business management (Sustainable Business Management - SBM) is presented with its key elements, which is relevant for both production and service companies.

Case studies are presented applying key elements of Sustainable Business Management in three branches: automotive, pulp and paper and aviation industries. Application of strategic performance scorecard will be discussed for an Austrian paper company. Assessment of the organizational situation of an European Aviation company and the possibilities of SD is done with a business excellence tool. Finally, product and technology assessment are applied in the automotive industry.

This paper shows the conceptual framework of Sustainable Business Management as practical support for management board to reach business excellence. The presented case studies point out practical relevance of the concept.

Sustainable Business Management

In order to serve sustainable development within an individual company, Sustainable Business Management is a practicable tool. It combines the challenges and requirements of market conditions and of shareholders and stakeholders, with the principles of Sustainable Development in order to meet operative and strategic objectives in a way that contributes to the goal of sustainability. It coordinates, controls and moves the organisation, it sets standards, defines objectives and tasks, and creates the organisational strategy in order to meet sustainability requirements within the frame-set fixed by the market situation (Baumgartner 2003).

Sustainable Development has been defined by the Brundtland report as ethical concept (World Commission on Environment and Development 1987): *“Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within two key concepts: the concepts of “needs”, in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of*

limitations imposed by the state of technology and social organisation on the environments ability to meet present and future needs. Thus the goals of economic and social development must be defined in terms of sustainability in all countries developed or developing.”

Robert et al define four conditions for the process of Sustainable Development (Robert et al. 2002):

1. Eliminate contribution to systematic increases in concentrations of substances from the earth's crust. This means substituting certain minerals that are scarce in nature with others that are more abundant, using all mined minerals efficiently, and systematically reducing dependence on fossil fuels.
2. Eliminate contribution to systematic increases in concentrations of substances produced by society. This means systematically substituting certain persistent and unnatural compounds for ones that are normally abundant or break down more easily in nature, and efficiently using all substances produced by society.
3. Eliminate contribution to the systematic physical degradation of nature through over-harvesting, introductions and other forms of modification. This means drawing resources only from well-managed eco-systems, systematically pursuing the most productive and efficient use both of those resources and land, and exercising caution in all kinds of modification of nature.
4. Contribute as much as we can to the meeting of human needs in our society and worldwide, over and above all the substitution and dematerialization measures taken in meeting the first three objectives. This means using all of our resources efficiently, fairly and responsibly so that the needs of all people on whom we have an impact, and the future needs of people who are not yet born, stand the best chance of being met.

In business management research, Sustainable Development is seen as an extension of environmental management (Müller-Christ and Hülsmann 2003, p. 266). One core aspect of environmental management deals with the efficient use of energy and materials (eco-efficiency), which corresponds to the economical principle of efficiency. The concept of Sustainable Development complements environmental management with social aspects of needs, and environmental aspects of conservation of natural functions. In economics, three interpretations of Sustainable Development can be found (Müller-Christ and Hülsmann 2003, p 266): an innovation-based, a normative and a rational interpretation.

An innovation-based interpretation of Sustainable Development can be seen as a derivation of the eco-efficiency concept. Sustainable Development is interpreted as a concept for cost reduction through increased efficiency using materials and energy. Sustainable Development and innovation have a causal relationship: “Sustainable Development requires an open and transparent innovation process within society, politics and economy supported by instruments of a free market economy. This will lead to competitiveness and innovation, new jobs and prosperity, efficient use of resources and ecological compatibility” (Müller-Christ and Hülsmann 2003, p 267 and www.ecosense.de). Economy and ecology are combined as win-win-concept, ecological innovations are carried out in case of simultaneous economic advantages (Blättel-Mink 2001, p. 122).

A normative interpretation of Sustainable Development has aspects of justness and equity in focus. According to the Brundtland definition the needs of present and future

generations have to be satisfied. But on a global scale, the industrialized countries are using most of resources and are producing most emissions. Sustainable Development is seen as concept solving the mismatch of massive energy and resource consumption in industrialized countries in order to allow developing countries an economic development within ecological carrying capacity. For business management, this approach leads to the concept of stakeholders. Requirements of stakeholders like society, non-governmental organizations, worker unions, customers or others have to be recognized and fulfilled according to the business strategy. Additionally, organization can manage the relationship to stakeholders in an active way (Müller-Christ and Hülsmann 2003, p. 269 and their cited literature).

A *rational interpretation* of Sustainable Development has the focus on the sustainable use of resources, this interpretation corresponds to the concept of strong sustainability (Neumayer 2003). Organizational activities must secure the availability of all types of resources – therefore sustainability can be defined as extended economic principle (Müller-Christ and Hülsmann 2003) and is an extension of the resource based view of strategic management. In particular, Hart pointed out this interpretation and suggested several propositions underlining the extended resource based view he named “natural resource based view of the firm” (Hart 1995).

For strategic management, the following points extracted from these interpretations: Firstly, innovation is recognized as an essential element for corporate sustainability. Economic, ecologic and social effects of innovations have to be assessed, the concept of integrated assessment is a suitable approach for this purpose (see Case Studies). Secondly, stakeholder requirements and demands have to be detected and actively managed. And thirdly, the rational approach focuses on the effectiveness of business activities.

The combination of these interpretations form the basis for the framework of Sustainable Business Management. Additionally, the contribution of sustainability activities to the corporate value have to be regarded. The individual business case for Sustainable Development depends on the specific situation of a company, but according to the four general principles of sustainability and the interpretations of Sustainable Development, the following general statements describe aspects and possible measures (Baumgartner 2002):

- Companies have to manage flows of material and energy. The objective has to be an absolute and relative reduction of them.
- Companies have to develop and construct their products and services in a way, which allows an eco-efficient process of usage and disposal. Products have to be energy and material extensive, and easily be reused or recycled within the economy.
- Companies have to redefine their business – the focus has to be on the solution for the customer, not the product or the technical characteristics of it. And the solutions provided by the company have to be sustainable.
- Companies have to respect social principles within the company, the society and the world.
- Companies have to be competitive and secure/increase their corporate value.

This statements are the nucleus of the normative, rational and innovation based interpretation of Sustainable Development.

In a first step, an organization has to be reviewed toward the possibilities for successful implementation of sustainability principles. It has to be focused on structural and cultural aspects. To support decision making processes within the organization, sustainability efforts and results have to be assessed systematically. In

the following step strategic management board has to decide, which aspects are regarded.

To support Sustainable Business Management, specific tools have to be used. The sustainability balanced scorecard is the central tool for the development and implementation of sustainable business strategies. In order to identify the position of an enterprise related to sustainable development the concept of sustainability cube is discussed. With this instrument the social, economical and ecological dimension of sustainable development within an enterprise can be measured. A tool for sustainable design of new products or services is the sustainable orientated quality function deployment. This concept combines the needs of the market and customers with the principles of sustainable development (Baumgartner 2003).

In this paper, the application of three instruments for Sustainable Business Management are presented: Integrated product and technology assessment, organizational assessment and sustainability balanced scorecard.

For assessing economical and ecological aspects of innovations, the concept of integrated assessment can be employed. An organizational assessment is discussed for an aviation company. In this case, the assessment has to be done for environmental aspects. An extension for economical and social aspects could be done easily. Developing a sustainability balanced scorecard with the focus on key performance indicators is discussed for a pulp and paper company.

Case Studies

The following case studies reflect important aspects of Sustainable Business Management and have been carried out by the Department of Economics and Business Management, University of Leoben in cooperation with Austrian companies.

Integrated Assessment: Example in the Automotive Industry

In a case study this tool is employed in the example of a new type of slide bearing which is designed for automotive application at MIBA Gleitlager GmbH. This enterprise is part of the MIBA AG, an Austrian producer of components for the automotive industry. Although currently exempted from European recycling legislative, researches are still going on to innovate a process to produce lead free aluminum based bearing. In this case the assessment focuses on the safe product development by keeping in view ecological aspects.

This example of integrated assessment has been already presented at the IAMOT conference 2004, therefore the discussion here is rather short (Baumgartner and Zielowski 2003). The integration of ecological aspects in business decisions has been discussed in the academic community for many years, but rarely implemented in real business life (Dreyer 1997, Hibbit et al. 2002, Summers Raines 2002). As a consequence, ecological aspects were not considered and business opportunities and innovation potentials have hardly been recognized and benefited. Selection of new technology respective products is an important business decision and has to take into account all aspects sufficiently (Baumgartner and Zielowski 2003).

The concept of integrated assessment respects step by step ecological and economical aspects of products, services or technologies. It supports both strategic and operative decisions and follows the main requirements of Sustainable Development. Since established ecological assessment tools are not linked to business strategy systems, their results are not transformed into business actions (Dreyer 1997, p. 2). Therefore the proposed assessment methodology evaluates both economic and ecologic effects together. The proposed tool is not limited to products

but is also applicable for services and technology. The basis for this assessment is the evaluation of material and energy flows relevant for environmental impact. The concept is subdivided into the following four modules: objectives, environment, economy and global assessment (see Figure 1). The modules are combined with fuzzy logic to reach a final score. Additionally, organizational aspects of the assessment object are considered.

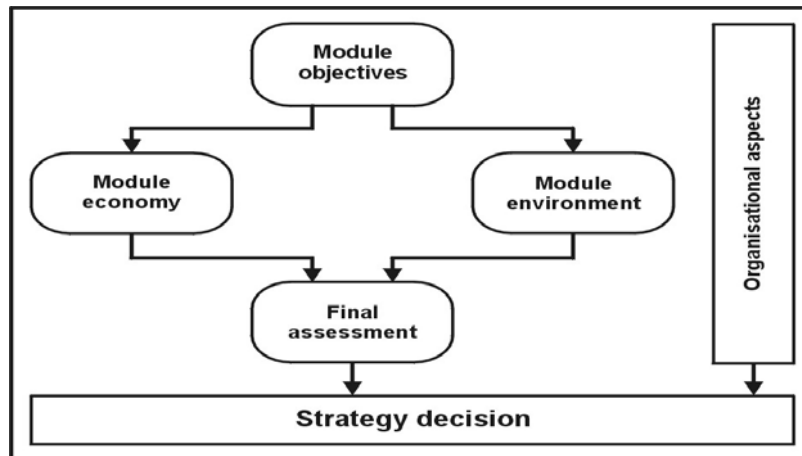


Figure 1: Integrated Assessment

Sustainability Balanced Scorecard in the Pulp and Paper Industry

In order to put a given corporate strategy in work, the concept of Balanced Scorecard (BSC) has been developed (Kaplan and Norton 1992). BSC is an established tool in industry and broadly implemented. It is used for applying a proposed strategy within an organization and combines financial aspects with non-financial. Usually BSC consists of a financial perspective (strategy for growth, profitability and risk viewed from the perspective of the shareholder), a customer perspective (strategy for creating value and differentiation from the perspective of customer), an internal perspective (strategic priorities for various business processes, which create customer and shareholder satisfaction) and a learning and growth perspective (priorities to create a climate that supports organizational change, innovation, and growth) (Kaplan and Norton 2001). Each perspective is measured by indicators, practical experience shows that 12 – 15 indicators are the manageable maximum on the top-level. Referring to the indicators we can distinguish between leading indicators and lagging indicators. Leading indicators are used for managing the preconditions for the strategic objectives, lagging indicators measure the success. BSCs can be implemented in each organisational unit if the unit has its own customers, processes and strategy. The aim of a Sustainability Balanced Scorecard (SBSC) is the integration of all three aspects of sustainable development – economy, ecology, social – in order to implement successful organizational strategies. Ecological and social tasks with strategic influence can be identified and management with a SBSC (Dyllick and Schaltegger 2001).

An Austrian pulp and paper company, which is a sub-division of an international mining company, developed a sustainability balanced scorecard for all paper mills. On the basis of an ambitious vision to become the most sustainable company in this branch in Europe targets has been derived. Following aspects has been identified for the SBSC (Stebegg 2003):

- Safety

- Health
- Environment
- Local Communities and Social Development
- Economic Contribution
- Human Rights
- Business Practices and Performance
- Employees/Contractors/Labour Rights

Each aspect is measured with an key performance indicators and controlled by the management board every six month. For each aspect, between two and four performance indicators have been developed. For each indicator targets has been fixed and controlled with a 3-level scheme: good, middle, bad. In case of indicators on the level “bad”, immediate action is necessary. The level “middle” indicators raising awareness about this indicator.

At the moment, this scorecard is used in the first controlling cycle and will be evaluated on one year.

Organizational Assessment: Aviation Industry

For an Austrian Aviation company, an organizational assessment has been carried out.

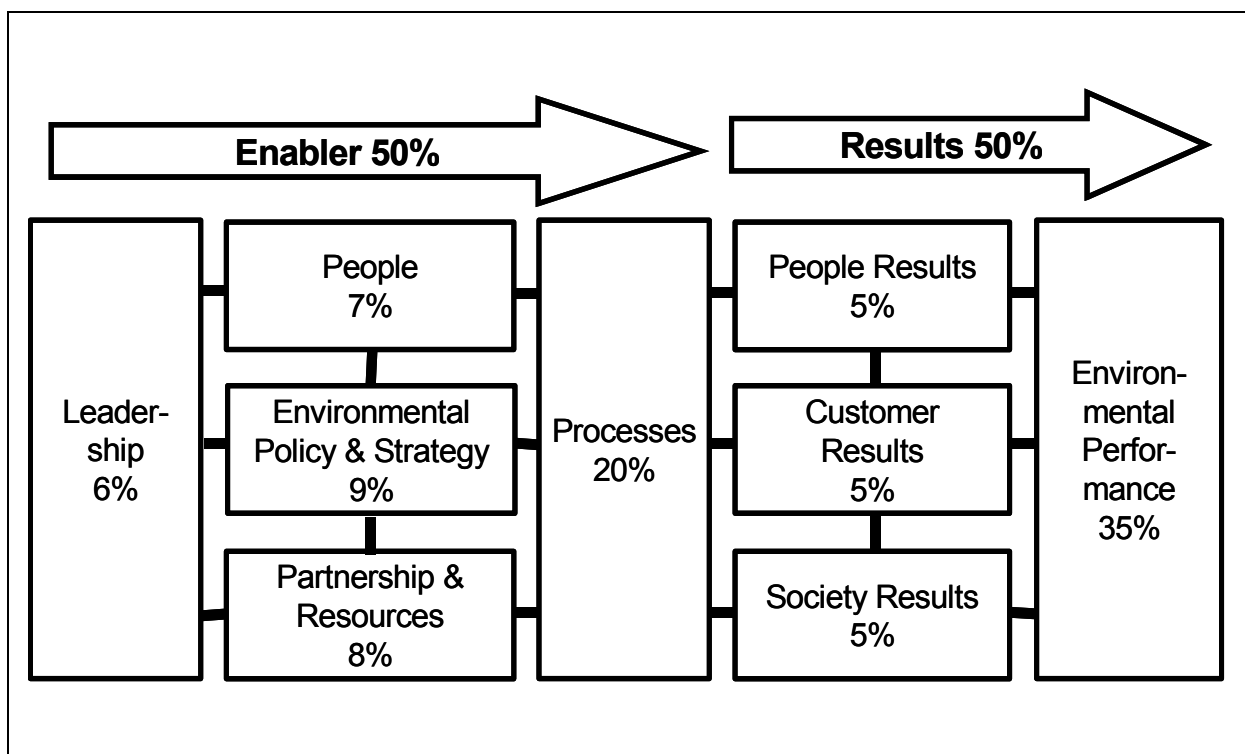


Figure 2: EFQM-Excellence Model (Stahlmann and Clausen 2000, p. 161)

The focus of the assessment was on environmental aspects in order to prove an implementation of an environmental management system according to ISO 14001 standard. The assessment is based on the business excellence model of the European Foundation of Quality Management (EFQM, www.efqm.org). This model has been adopted for environmental aspects (Stahlmann and Clausen 2000). This model evaluates the environmental achievement of an organization in the reference

to the effectiveness and efficiency. It consists of nine criteria, which are subdivided in enabler and results. For each criteria, a maximum of points is available (see Figure 2). In total, 1000 points can be reached.

The criteria are assessed with a questionnaire. It is possible, to distinguish between a current position and planned position. Each criteria is characterized with several questions, which are assessed numerical on a scale from zero to six (see Table 1). In this specific case, no data for the environmental performance were available. Therefore, only eight criteria have been used and the maximum of available points were 650. Table 1 shows for two criteria detail questions with their current and planned values. This indicates, that this model can also used for controlling purposes and strategic planning. The assessment questionnaire has been adopted with the project team for the specific organization. In interviews management representatives answered each question. The final score in this case were 267 points of 650 with following allocation:

- Leadership: 27 points of 60
- Policy and Strategy: 19 points of 90
- People: 15 points of 70
- Resources: 22 points of 80
- Processes: 100 points of 200
- Society Results: 15 points of 50
- People Results: 34 points of 50
- Customer Results: 35 points of 50

This result has to be seen in comparison with the planned activities in the case of implementation of an environmental management system, where 385 points could be reached. The score of 385 points seems rather low in comparison to available 650 points, but this is the ideal status. Management board received the recommendation for the application of ISO 14001 because assessment showed a remarkable improvement of environmental impacts. In addition, economic advantages due process improvement and raising efficiency has been detected.

Table 1: Questionnaire for the organizational assessment

Measures		realized			planned		absent
		every time, yes	often	some-times	short-term	long-term	never, no
Criteria	Points	5	4	3	2	1	0
1 Leadership: max. points 60							
weighting	6,00						
1.1 Has the management board nominated an executive for environmental issues?		5					
1.2 Is the management board involved in planning the environmental policy?		5		3			
1.3 Have management reviews been carried out for the environmental management system?				3			0
1.4 Are ecological aspects considered within business strategy?					2		0
1.5 Are ecological aspects of suppliers and customers taken in account?				3			0
2 Policy and Strategy: max. points 90							
weighting	9,00						
2.1 Does an written environmental policy exist?		5				1	
2.2 Is the environmental policy accorded to the company?		5					0
2.3 Is the environmental policy communicated to the employees?		5					0
2.4 Is the environmental policy valid for partners and joint ventures also?				3			0
2.5 Are aspects of Sustainable Development concerned within environmental policy?				3	2		
2.6 Are marketing aspects considered within environmental policy?				3			0
3 People: max. points 70							
weighting	7,00						
4 Partnership and Resources: max. points 80							
weighting	8,00						
5 Processes: max. points 200							
weighting	20,00						
6 Society Results: max. points 50							
weighting	5,00						
7 People Results: max. points 50							
weighting	5,00						
8 Customer Results: max. points 50							
weighting	5,00						

Conclusion and Outlook

In this paper the concretisation of Sustainable Development for business organizations has been discussed. On the basis of central elements of the sustainability philosophy and of different interpretations in economic theory a framework for Sustainable Business Management has been developed. Key elements are innovation, stakeholder orientation and effectiveness of business activities. These elements are focused to five fields of action: management of material and energy flows, regarding the life cycle of products, focus on customer satisfaction, respecting social aspects of business activities and securing profitability.

The specific employment of Sustainable Business Management depends on the situation of an organization and has to be supported with instruments. Determination of organizational sustainability aspects can be done with an organizational assessment. Deploying a sustainable business strategy can be made with a sustainability balanced scorecard and innovations can be assessed with an integrated product and technology assessment. The deployment of these instruments is presented in three case studies.

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