DEVELOPMENT OF A SUSTAINABILITY BALANCED SCORECARD: TRANSLATING STRATEGY INTO VALUE-BASED SUSTAINABILITY MANAGEMENT

Frank Figge, Tobias Hahn, Stefan Schaltegger and Marcus Wagner, Center for Sustainability Management, University of Lueneburg, Germany.

The Balanced Scorecard is a management tool that supports the successful implementation of corporate strategies on the basis of performance indicators linked with causal chains. It has been discussed and considered widely both in practice and research. By linking operational and non-financial corporate activities through causal chains to the firm's long-term strategy the Balanced Scorecard allows alignment and management of all corporate activities according to their strategic relevance. The Balanced Scorecard makes it possible to take into account non-monetary strategic success factors that have a significant impact on the economic success of a business. The Balanced Scorecard thus provides a promising starting-point to the incorporation of environmental and social aspects into the main management system of a firm. Given this potential, a range of authors have dealt with the topic of a Sustainability Balanced Scorecard. However, the basic approach and method of value-oriented sustainability management through the Balanced Scorecard have only recently been discussed in detail (cf. Figge et al. 2001a and 2001b). Value-oriented corporate sustainability management with the Balanced Scorecard helps to overcome the shortcomings of conventional approaches to environmental and social management systems by integrating the three pillars of sustainability into a single and overarching management tool.

After a brief discussion of the different possible forms of a Sustainability Balanced Scorecard this article takes a closer look at the process of and steps in formulating a Sustainability Balanced Scorecard for a business unit. Before doing so, the Balanced Scorecard and its suitability for value-oriented sustainability management are briefly outlined.

1 Introduction

In the market system economic scarcities are reflected by assigned market prices. Environmental and social scarcities are, however, only partially reflected in economic transactions, although they have become increasingly important for business. Management reacts to perceived scarcities through the use of management instruments. To the degree that environmental and social issues are reflected in market transactions and with the growing importance of environmental and social issues many companies have implemented specific environmental or social management systems during the last decade. These systems have, however, rarely been integrated with the general management system of the firm. As a consequence, environmental and social management is mostly not linked to the economic success of the firm and the economic contribution of environmental and social management therefore remains unclear. Given the desire to achieve simultaneous improvements in the economic, environmental, and social performance of businesses, in order to achieve strong contributions to sustainable development, this lack of integration turns out to be a major obstacle. Concerning the relation between the environmental and social performance of the firm and its economic performance, the literature is mainly based on empirical studies that refer to the correlation, but not to the causality, between environmental and social measures and the economic success of firms. To date there is rather limited literature on the relation between environmental and social measures and the achievement of long-term economic goals. The Balanced Scorecard (BSC) as a strategic management tool claims to identify the major strategically relevant issues of a business and to describe and depict the causal contribution of those issues that contribute to the successful achievement of a firm's strategy. Thus, it appears promising to use the Balanced Scorecard method to integrate environmental and social management with the general management of a firm. Only recently the basic approaches and methods of value-oriented sustainability management with the Balanced Scorecard have been discussed in detail.

2 The Balanced Scorecard as an instrument for value-based sustainability management

2.1 The Balanced Scorecard approach

The concept of the Balanced Scorecard was developed in the early 90's as a new approach to performance measurement because of problems of short-termism and past orientation in management accounting (cf. Kaplan & Norton 1992). The concept of the BSC is based on the assumption that the efficient use of investment capital is no longer the sole determinant of competitive advantage but, increasingly, soft factors such as intellectual capital, knowledge creation or excellent customer orientation are becoming more important. As a result Kaplan and Norton suggest a new performance measurement approach that focuses on corporate strategy from four perspectives. This BSC aims to make the contribution and the transformation of soft factors and intangible assets into long-term financial success explicit and, thus, controllable. The BSC's four perspectives can be characterised briefly as follows:

- The *financial perspective* indicates whether the transformation of a strategy leads to improved economic success. Thus, the financial measures assume a double role. On the one hand, they define the financial performance that a strategy is expected to achieve. On the other hand, they are the endpoint of cause and effect relationships referring to each of the other BSC perspectives.
- The *customer perspective* defines the customer/market segments in which the business competes. By means of appropriate strategic objectives, measures, targets and initiatives the customer value proposition is represented by the customer perspective, through which the firm/business unit wants to achieve a competitive advantage in the envisaged market segments.
- The *internal process perspective* identifies those internal business processes, which enable the firm to meet the expectations of customers in the target markets and those of the shareholders.
- Finally, the *learning and growth perspective* describes the infrastructure that is necessary for the achievement of the objectives of the other three perspectives. In this case, the most important areas are qualification, motivation and goal orientation of employees, and information systems.

The purpose of a BSC is to formulate a hierarchical system of strategic objectives for the four perspectives, derived from the business strategy and aligned towards the financial perspective. Based on such a causal system of objectives, corresponding measures are formulated in all four perspectives. Kaplan and Norton basically distinguish between *lagging* and *leading indicators*.

Lagging indicators and long-term strategic objectives are formulated for the strategic core issues of each perspective that are derived from the strategy of the business unit. Lagging indicators thus indicate whether the strategic objectives in each perspective were achieved.

In contrast to lagging indicators, *leading indicators* are highly firm-specific. They express the specific competitive advantages of the firm and represent how the results – reflected by lagging indicators – should be achieved. Based on the specific strategy of the business unit, the key performance drivers that have the greatest influence on the achievement of the core strategic objectives (measured by lagging indicators) are identified for every perspective.

Integration of the indicators with the four perspectives is achieved by defining goals and appropriate lagging indicators and leading indicators/performance drivers for a specific business strategy. By doing so, BSC translates strategy in terms of objectives, measures and targets for the four perspectives. However, it does not represent strategy as a loose collection of indicators and measures. Instead these are linked through cause and effect relationships.

By formulating and defining the goals and measures based on the strategy, starting with the financial perspective in a top down process, it becomes clear which influences have the greatest impact on the lagging indicators and thus ultimately on the achievement of objectives.
These strategy specific influence patterns are reflected through cause-and-effect-chains which, directly or indirectly, link all the goals, indicators, and measures of the BSC perspectives hierarchically towards the financial perspective with its long-term financial goals. It is noteworthy that the causal linking of leading and lagging indicators not only occurs within each perspective, but also by constructing effect chains through the four perspectives of the BSC. This means that lagging indicators of lower-level Balanced Scorecard perspectives act as leading indicators/performance drivers for an indicator in a higher-level perspective. Proceeding in this way leads to a situation where the lagging (financial) indicators are combined with the leading indicators/performance drivers through the four perspectives. This strategy-focused hierarchical approach ensures the identification of major strategic issues of a business and assigns them their particular strategic relevance – as strategic core issues or performance drivers. This enables the orientation of all business resources and activities towards the strategy and better communication of the strategy.

The BSC as an instrument for performance measurement was further developed beyond its original conception into a strategic management concept. Here, the BSC is used to communicate and coordinate the translation of the business strategy: The gap between strategic and operative planning can be bridged and the long-term achievement of the firm’s strategic objectives guaranteed by means of a consistent application and formulation of a previously defined business strategy in each of the four perspectives of the BSC. In particular, Kaplan and Norton subdivide the strategic management system of the BSC into four partial processes. The central question for the theme of this article about the structure of a BSC is mainly related to the first of the four critical management processes to be described by Kaplan and Norton: clarification and translation of vision and strategy.

The BSC is directed top-down, both in its contents and in its development as a management system. Therefore, to be able to clarify and translate the strategy top-management must agree on the strategy. The goal is to create a common and comprehensive strategic basis in the form of a formulated BSC. Because of this, the verbally formulated strategy should be translated and causally linked in terms of objectives and measures. In every perspective the strategic core elements and performance drivers which are pivotal for a successful business unit are identified. These strategic core elements and performance drivers are then associated causally with each other through the four perspectives, as described above, and oriented towards the financial perspective. The result is a hierarchical cause-effect network reflecting the fundamental assumptions for successful translation of the strategy.

2.2 Suitability of the Balanced Scorecard as a tool for value-based sustainability management

In a BSC all aspects relevant for achieving a permanent competitive advantage should be included. The creation and preservation of competitive advantages serves to permanently secure a firm's economic success. In the four perspectives of the BSC, therefore, the activities critical for creating value are included and causes are linked to effects. In the formulation of a BSC the objectives/measures in all perspectives are deduced from the long-term strategic financial goals in a *top-down* process. This hierarchical structure of the BSC guarantees a value orientation for all business activities.

This characteristic of the BSC can also be used for the management of environmental and social aspects. Against the backdrop of the fundamental deficits of most current approaches to environmental and social management, as described above, the ability of the BSC to integrate the three dimensions of sustainability offers the possibility of a value-based approach to the management of environmental and social aspects. A value-based approach to sustainability management aims at a simultaneous achievement of ecological, social and economic goals. Therefore, the relation between environmental and social measures and the economic success of the firm has to be explicitly taken into account. The three pillars of sustainability need to be integrated by a value-oriented approach for three reasons:

1. Sustainability management that reduces the business value is dangerous because it is carried out by firms only as long as the company is successful and can afford this "luxury". If firms find themselves under financial distress, those costs are cut down first which do not contribute to the financial bottom line. Sustainability management which does not create business value will thus be practiced only as long as firms are successful.
2. Non-value-oriented sustainability management is an inappropriate role model for other businesses. As firms that want to promote or reinforce their environmental and social management often orientate themselves towards competitors, it is improbable that they will adopt sustainability management which creates losses rather than benefits.

3. Non-value-oriented sustainability management is by definition not sustainable. According to the 3-pillar-concept sustainability involves economic, ecological and social aspects. Usually, it is implicitly assumed that these aspects bear a complementary relation to each other. Sustainability is only achieved if ecological, social and economic goals are reached simultaneously. Only a business which improves with regard to all the three dimensions of sustainability demonstrates a clearly sustainable performance.

The BSC assists the identification and the management of those environmental and social aspects that contribute to financial business goals. Therefore, a Sustainability Balanced Scorecard fulfils the central requirement of the sustainability concept for a permanent improvement of the business' performance in economic, ecological and social terms. A particular suitability of the BSC for the value-based integration of all three sustainability dimensions results from the possibility of also considering soft factors which cannot be monetarised. Environmental and social aspects often show precisely these characteristics. Thus, it is necessary to determine the environmental and social aspects that are relevant for economic success and to include them in a BSC. In the following section the fundamental possibilities for integrating environmental and social aspects are briefly described.

3 Different possible approaches for integrating environmental and social aspects

There are basically three possibilities for integrating environmental and social aspects in the BSC. Firstly, environmental and social aspects can be integrated in the four existing standard perspectives. Secondly, an additional perspective can be added to take environmental and social aspects into account. Thirdly, a specific environmental and/or social scorecard can be formulated.

3.1 Integration of environmental and social aspects in the four Balanced Scorecard perspectives

Environmental and social aspects can be subsumed under the four existing BSC perspectives like all other potentially relevant strategic aspects. This means that environmental and social aspects are integrated in the four perspectives through respective strategic core elements or performance drivers for which lagging and leading indicators, as well as targets and measures, are formulated. Through this top-down derivation those environmental and social aspects are identified which are strategically relevant within the framework of the four standard perspectives of the BSC. Environmental/social aspects consequently become an integral part of the conventional Scorecard and are automatically integrated in its cause-effect links and are hierarchically orientated towards the financial perspective and the successful conversion of a business' strategy.

Within all of its four standard perspectives the logic of the BSC remains almost exclusively in the economic sphere. Exchange processes outside the market mechanism are hardly considered at all. Therefore, the approach of integrating environmental and social aspects by subsuming them under the four standard perspectives is particularly relevant for strategic environmental and social aspects that are already integrated in the market system. For instance, for a firm that targets an environmental customer segment the core measure “market share” in the customer perspective would have an environmentally orientated dimension. Also, the leading indicator “product features” would have an environmental dimension.

3.2 Introduction of an additional non-market perspective into the Balanced Scorecard

As already noted above, environmental and social aspects and scarcities are not (yet) fully integrated in the market exchange processes through assigned market prices. The reason for this is that, fundamentally, environmental and social aspects originate from non-market systems as social constructs. Thus, despite some environmental and social aspects being internalised, in the meantime many environmental and social aspects are still not integrated into the market coordination mechanism and often represent externalities. However, firms do not operate exclusively in the commercial-economic sphere. Rather, as quasi-public institutions they interact with other spheres such as, for instance, the social or the legal sphere. Environmental and social aspects as social constructs can emerge in all spheres and can become strategically relevant for firms through other mechanisms than the market exchange process.

Given these particular characteristics of environmental and social aspects it becomes clear that for the integration of strategically relevant environmental and social aspects from outside the market system the standard BSC structure – which only reflects the market system – might have to be extended by an additional perspective. Here the proposal is for the introduction of an additional, so called non-market perspective in order to integrate strategically relevant but not market-integrated environmental and social aspects. Also Kaplan and Norton point out that the firm-specific formulation of a BSC may involve a renaming or addition of perspectives. In order to justify an introduction of an additional non-market perspective environmental and social aspects from outside the market system must explicitly represent strategic core aspects for the successful execution of the strategy of the company considered. Thus, the necessity for an additional non-market perspective arises when environmental or social aspects significantly influence the firm’s success from outside the market system. At the same time this cannot be reflected according to their strategic relevance within the four standard BSC perspectives.

Strategically relevant environmental/social aspects from outside the market system can have an impact on a firm’s performance through all four perspectives of the conventional Scorecard. This means, they can be value-relevant both directly (with regard to the financial perspective) and indirectly (with regard to the other perspectives). Thus, an additional non-market perspective can affect all four conventional perspectives. Analogously to the process of formulating a conventional scorecard, the strategic core aspects and leading indicators of the non-market perspective must also be identified and reproduced through respective measures. These measures are then linked towards the financial perspective by means of hierarchical cause-and-effect chains. Consequently, value-oriented and strategy-linked management is guaranteed for the strategically relevant non-market aspects, too. As will be discussed in section 3.4, the decision as to whether an additional non-market perspective is necessary to formulate a Sustainability Balanced Scorecard for a specific business strategy cannot be taken in advance. It can only be taken within the process of formulation.

3.3 Deduction of a derived environmental and social scorecard

The third approach to integrating environmental and social aspects into the BSC lies in the deduction of an environmental and/or social scorecard. At this point, it is very important to note that because of the value-orientation pursued in this paper such a scorecard cannot be developed in parallel with the conventional scorecard. Instead, in order to achieve value-based sustainability management this is only possible in conjunction with one of the two variants of integration discussed in sections 3.1 and 3.2. Therefore a derived environmental/social scorecard is *not an independent alternative for integration*, but only an *extension* of the two variants discussed in the previous sections. A derived scorecard as discussed in this section draws its contents from an existing BSC system and is thus predominantly used in order to coordinate, organise and further differentiate environmental and social aspects, *once their strategic relevance and position in the cause-and-effect chains have been identified by the approaches presented above*.

Deriving such a scorecard can serve to clarify the relationship of an internal service unit with the strategic business units and their scorecards. Thus, this additional variant of a *derived* environmental/social scorecard allows coordinated control of all strategically relevant environmental/social aspects which are spread and integrated in the whole overarching BSC system.

3.4 Relationship of the three approaches to build a Sustainability Balanced Scorecard

As already pointed out in the previous paragraph, a fundamental difference exists between the three approaches to building a Sustainability Balanced Scorecard. On the one hand, the first two variants (subsumption and addition) refer to the structure of the core scorecard for a business unit. On the other hand, the derived environmental/social scorecard is deduced from the core scorecard. In other words, a derived environmental or social scorecard can only be formulated after at least one of the two first variants has been realised for the core scorecard system. The contents of a derived scorecard results from the higher-level BSC of the strategic business unit. Thus, in the process of building up a SBSC, formulating a derived environmental/social scorecard only represents a possible second step. The first step always needs to be integration of the strategically relevant environmental and social aspects into the core BSC with the help of the two variants discussed in 3.1 and 3.2.

After having distinguished the first two approaches from the subsequent possibility of a derived environmental or social scorecard, it is important to take a look at the relation between the two variants concerning the structure of a business unit's core scorecard. It is important to note that certain environmental or social aspects can be subsumed under the four conventional BSC-perspectives parallel with the introduction of a specific perspective for other strategically relevant environmental or social aspects. In other words, the first two alternatives of structuring a SBSC are not mutually exclusive. Given the characteristics of the two alternatives, as outlined in 3.1 and 3.2, it becomes clear that the difference mainly lies in the characteristics of the strategically relevant environmental and social aspects. For those strategically relevant environmental or social aspects which are already integrated in the market system (e.g. environmental costs) it is fairly straight-forward to integrate them by means of appropriate leading or lagging indicators into one of the four conventional perspectives. In contrast, if environmental and social aspects exert their strategically relevant influence via mechanisms acting in the firm's non-market environment (e.g. complaints of neighbour groups), then an additional, non-market perspective is necessary.

Because there might well exist situations where strategically relevant environmental or social aspects already incorporated in the market system occur alongside those influencing the business unit via non-market mechanisms, it is neither necessary nor desirable to make a final decision for or against one of the two variants of integration. Most of the authors who have dealt with different approaches to the integration of environmental and social aspects in the BSC so far neither explicitly consider the relationship between the different approaches nor discuss the preconditions of their respective appropriateness. Two fundamental conditions for the introduction of an additional non-market perspective can be identified. In order to justify the addition of a non-market perspective (i) environmental and social aspects have to be strategically relevant, i.e. they are either strategic core aspects or performance drivers *and* (ii) it is not possible to include these aspects appropriately, i.e. according to their strategic relevance, into the four conventional perspectives of the BSC.

Regarding the process of formulating a Sustainability Balanced Scorecard these findings lead to the conclusion that the decision which structure is appropriate for a specific business unit can not be taken without further consideration. Rather it depends on the nature of the strategically relevant environmental and social aspects that are identified during the process of formulating a Sustainability Balanced Scorecard. The choice of how environmental and social aspects are integrated is therefore taken during this process, rather than at its beginning. The process of constructing a Sustainability Balanced Scorecard is described in the following section.

4 The process of formulating a Sustainability Balanced Scorecard

Based on our reasoning in the previous sections the process of formulating a Sustainability Balanced Scorecard has to meet a number of basic requirements:

- First, the process must lead to value-based management of environmental and social aspects (see section 2.2).
- Second, in order to ensure their value-based management, environmental and social aspects must be integrated with the general management system of the firm.
- A Sustainability Balanced Scorecard which exactly meets the specific characteristics and requirements of the strategy and the environmental and social aspects of a business unit must not be generic. The process therefore has to ensure, third, that the Sustainability Balanced Scorecard formulated is business unit-specific.
- Fourth, environmental and social aspects of a business unit must be integrated according to their strategic relevance. This includes the question of whether the introduction of an additional non-market perspective is necessary.

On the basis of these requirements the process of formulating a Sustainability Balanced Scorecard can be divided into three major steps. First, the strategic business unit has to be chosen. This step presupposes that a strategy for the business unit exists. Second, the environmental and social aspects of concern have to be identified.

And third, the relevance of those aspects for the specific business unit's strategy has to be determined. Figure 1 gives an overview of the whole process.

4.1 Choice of strategic business-unit

The BSC as developed by Kaplan and Norton originally has been designed for strategic management at the business unit level. Thus, as a first step, the business unit for which a Sustainability Balanced Scorecard shall be formulated has to be chosen. For small and medium sized enterprises the business unit level may be identical with the corporate level, while in large companies or groups there are often several business units which aim at different customer segments and which are often organised as independent profit centres. The choice of the business unit presupposes that a strategy exists for this business unit. It is important to note that the BSC is not a tool for the formulation of strategies. Rather, the BSC serves to describe and translate an existing strategy consistently in order to enhance the successful execution of the strategy. The formulation of a Balanced Scorecard is thus not an independent process but is part of a wider framework of competitive positioning and strategy formulation. This is also the case for the formulation of a SBSC: Before a SBSC can be formulated top management has to arrive at a common agreement on what the strategy is, no matter whether it explicitly mentions sustainability issues.

4.2 Identification of the environmental and social exposure of the business unit

In order to ensure that the SBSC is tailored to the specific needs of the business unit chosen, the environmental and social aspects that affect the business unit must be identified in a second step. The result is a profile of the environmental and social exposure of the business unit. The purpose of this step is to identify all the pertinent

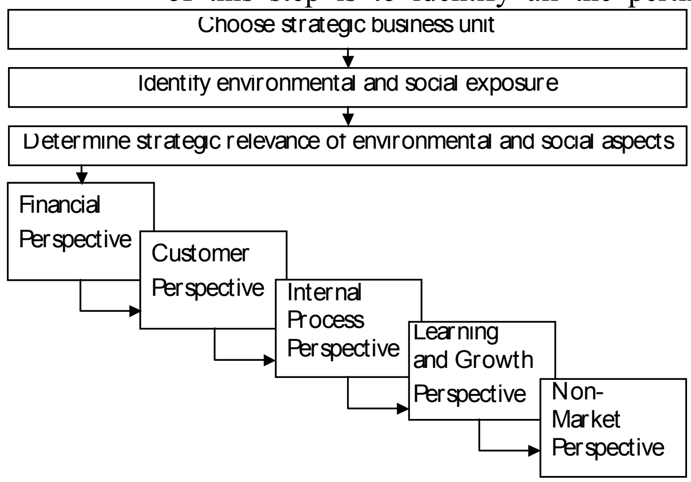

Figure 1. Process of formulating a SBSC.

environmental and social aspects in order to obtain a comprehensive list of all possible strategically relevant environmental and social aspects. For the identification of the environmental and social exposure of a business unit two generic frameworks can be used.

The first framework (see Table 1) serves to identify the environmental exposure of a business unit. The idea behind this framework is to identify all the environmental interventions which originate from a business unit's operations and products. These interventions are eventually responsible for the environmental impacts that a business unit causes, because all environmental problems can finally be traced back to physical and/or chemical interventions. As an advantage the identification of the environmental exposure of a business unit along with the environmental interventions provides a close proximity to the operations and products of the firm. In order to obtain the specific business unit environmental exposure all activities and products of the business unit must be checked against the categories of the framework as shown in Table 1. It is important to

Environmental Exposure of a Business Unit	
Type of Environmental Intervention	Business Unit specific Occurrence
Emissions (to air, water, and soil)	…
Waste	…
Material Input/Material Intensity	…
Energy Intensity	…
Noise and Vibrations	…
Waste Heat	…
Radiation	…
Direct Interventions on Nature and Landscape	…

Table 1. Framework for the identification of the environmental exposure of a business unit.

Social Exposure of a Business Unit							
Direct Stakeholders				**Indirect Stakeholders**			
internal	along the value chain	in the local community	societal	internal	along the value chain	in the local community	Societal
particular stakeholder group … *claim/issue* …	*particular stakeholder group* … *claim/issue* …	*particular stakeholder group* … *claim/issue* …	*particular stakeholder group* … *claim/issue* …	*particular stakeholder group* … *claim/issue* …	*particular stakeholder group* … *claim/issue* …	*particular stakeholder group* … *claim/issue* …	*particular stakeholder group* … *claim/issue* …

Table 2. Framework for the identification of the social exposure of a business unit.

consider all pertinent environmental interventions in order to come up with a comprehensive and business unit specific profile of the environmental exposure which leaves out no possible strategically relevant aspects.

Social aspects that are strategically relevant can be identified analogous to the environmental aspects. However, because of the great variety and diversity of social aspects and the lack of a common foundation in natural sciences, as can be found for environmental aspects, it is very difficult to achieve a comprehensive classification of social aspects. Instead, social aspects are heavily depend on the preferences and values of the different actors involved. It is therefore advisable to classify social aspects not according to their contents but according to the actors involved. The stakeholder approach provides a useful framework with which to classify the actors and which are concerned with different social claims.

The social issues concerning a business unit can thus be identified by systematically following a comprehensive framework of potentially relevant stakeholder groups. Table 2 provides such a framework. Potentially relevant stakeholder groups for a business unit can be distinguished into internal stakeholders, stakeholders along the value chain, stakeholders in the local community and societal stakeholders. As a further, cross-sectional classification direct stakeholders can be distinguished from indirect stakeholders. Direct stakeholders are those groups which are related to the firm by direct material resource exchange flows, while with indirect stakeholders no such direct material exchange flows are established. As a first step, all *pertinent stakeholder groups* for a business unit have to be identified. In the second step the *social claims and issues* brought up by these groups have to be identified. By specifying the framework shown in Table 2 a specific profile of the social exposure of the business unit can be obtained.

4.3 Determination of the strategic relevance of environmental and social aspects

For both the conventional as well as the Sustainability Balanced Scorecard the identification and alignment of strategically relevant aspects is the core step. The purpose of this step is to translate the verbally formulated strategy of a business unit into causally linked objectives and indicators. As already mentioned above (see 2.1) the Balanced Scorecard is a tool to identify the 15 to 25 strategically most relevant aspects and to link them causally and hierarchically to long-term financial success as measured by the financial perspective. For the formulation of a Balanced Scorecard, Kaplan and Norton propose a top-down process with which the strategically relevant aspects in all the perspectives are identified, starting from the financial perspective. In principle, this approach can also be used for the formulation of a SBSC. The only difference is that in addition to "conventional" aspects environmental and social aspects have to be considered, too. For each perspective the strategic core issues represented by lagging indicators and the performance drivers represented by the leading indicators have to be determined for the specific strategy of the business unit chosen. By going through the perspectives in a cascade-like process starting from the financial perspective as indicated in Figure 1 the hierarchical and causal linkage of the strategically relevant aspects is guaranteed. This serves to align all strategically relevant aspects of a business unit towards the successful conversion of the strategy and thus towards long-term economic success.

Financial perspective	Customer perspective	Process perspective	Learning and growth perspective	Non-market perspective
▪ Revenue growth ▪ Productivity growth ▪ Asset utilization	▪ Market share ▪ Customer acquisition ▪ Customer retention ▪ Customer satisfaction ▪ Customer profitability	▪ Innovation process ▪ Operations process ▪ Postsale service process	▪ Employee retention ▪ Employee productivity ▪ Employee satisfaction	▪ Freedom of action ▪ Legitimacy ▪ Legality

Table 3. Generic categories for the formulation of lagging indicators.

Like all other business issues we can distinguish between three stages of strategic relevance of environmental and social aspects:

- Environmental or social aspects can represent *strategic core issues* for which lagging indicators have to be defined. Those lagging indicators measure whether the strategic core requirements in the perspective have been achieved. Kaplan and Norton have proposed generic categories for the formulation of lagging indicators in each perspective (see Table 3).
- Performance drivers, as represented by leading indicators, show *how* the results in each perspective, reflected by the lagging indicators, are to be achieved. Performance drivers are highly business specific but there are once again categories to support identification (see Table 4). Leading indicators will reflect environmental or social issues whenever environmental and social aspects act as *performance drivers*.

- Finally, environmental or social issues can also represent *hygienic factors*, reflected by diagnostic indicators. Hygienic factors are issues which have to be managed sufficiently in order to guarantee successful business operations, however, addressing these factors does not lead to any competitive advantage. In other words, hygienic factors represent necessary but not sufficient conditions for a successful execution of a firm's strategy. Therefore, those factors are not part of the Balanced Scorecard.

Financial perspective	Customer perspective	Process perspective	Learning and growth perspective	Non-market perspective
▪ Financial indicators	▪ Product attributes ▪ Customer relationship ▪ Image and reputation	▪ Cost indicators ▪ Quality indicators ▪ Time indicators	▪ Employee potentials ▪ Technical infrastructure ▪ Climate for action	*leading or lagging indicators from all other perspectives*

Table 4. Generic categories for the formulation of leading indicators.

Environmental and social aspects have to be classified and integrated into the scorecard system according to their strategic relevance just like all potentially strategically relevant aspects. In order to determine the strategic relevance of environmental and social aspects for each perspective a matrix as shown in Figure 2 on the next page can be used. To determine, whether environmental and social aspects represent strategic core issues, performance drivers or simply hygienic factors of environmental and social exposure are cross checked against the categories of lagging and leading indicators (see Table 3 and 4) in a cascade-like top-down process as shown in Figure 1 for every perspective. It is useful to check systematically all pertinent environmental and social aspects by answering the following three questions when going through the four conventional perspectives:

- Does the environmental or social aspect represent a strategic core issue for the business strategy of our business unit (→ environmental or social lagging indicator)?
- Does the environmental or social aspect contribute significantly to a strategic core issue and therefore represent a performance driver for the business strategy of our business unit (→ environmental or social leading indicator)?
- What is the substantial contribution of the performance driver to the achievement of a strategic core issue?
- Is the environmental or social aspect simply a hygienic factor which necessarily has to be well managed but leads to no particular strategic and competitive advantage?

As already mentioned above (see section 3.4) the decision whether adoption of an additional non-market perspective is necessary can only be taken during rather than before the process of formulating a SBSC. Therefore, after having gone through the four conventional scorecard perspectives, whether strategically relevant environmental or social aspects exist that significantly influence the success of the business unit's strategy via other mechanisms than the market system, finally has to be checked. This can be done by answering the following questions:

		Environmental exposure								Social exposure							
										Direct Stakeholders				Indirect Stakeholders			
		Emissions	Waste	Material input/intensity	Energy intensity	Noise and vibrations	Waste heat	Radiation	Land use	Internal	Along the value chain	In the local community	Societal	Internal	Along the value chain	In the local community	Societal
Strategic core issues	#1																
	#2																
	…																
Perfor-mance drivers	#1																
	#2																
	...																

Figure 2. Matrix to determine the strategic relevance of environmental and social aspects.

- Are there any environmental or social aspects that influence the business unit's success via non-market mechanisms?
- Do these environmental or social aspects represent strategic core elements at which the business unit has to excel in order to successfully execute its strategy?
- What is the substantial contribution of the performance driver to the achievement of the business unit's strategy?

When going through the perspectives in the described cascade-like manner it is important to remember that the causal relationships between the strategically relevant aspects identified not only exist be-tween lagging and leading indicators within one perspective. Rather, all the aspects and indicators have to be directly or indirectly linked towards the financial perspective. The strategic core aspects and value drivers of the lower level perspectives in the cascade shown in Figure 1 serve to achieve the objectives set by the indicators in the upper level perspectives. Therefore, every time a move is made from an upper level perspective to the next lower level perspective in the cascade it has to be ensured that and shown explicitly how the lower level strategic core aspects and performance drivers contribute to the achievement of the objectives in the higher level perspective(s). This serves to establish the hierarchic cause-and-effect chains, which link all strategically relevant aspects towards the successful execution of the strategy. As discussed above (see 3.2) in contrast to the other scorecard perspectives the non-market perspective acts as a frame, which embeds the other perspectives. However, the strategic aspects of the non-market perspective have to be linked directly or indirectly to the financial perspective as well. It is important to note in this context that the core aspects of the non-market perspective can in principle influence objectives in any other perspective. Consequently, as indicated in the last column of Table 4, the performance drivers for the non-market perspective can also be found in any other perspective.

As the result of the process described above, all strategically relevant aspects reflected by appropriate lagging or leading indicators are part of cause-and-effect network, which visualises and translates the strategy of the business unit. By systematically going through the perspectives in a top down direction the strategic relevance of the pertinent environmental and social aspects is determined as for all other, "conventional" aspects. This ensures the full and value-orientated integration of environmental and social aspects in the general management system.

The process of formulating a Sustainability Balanced Scorecard described in this paper shows how environmental and social issues can be integrated with the general management of a business unit. The process is designed in such a way, that it can be applied no matter whether a conventional scorecard already exists prior to integrating environmental and social aspects. Thus the Sustainability Balanced Scorecard provides a strong tool for an integrated and value-based sustainability management. It helps to overcome the shortcomings of the often parallel approaches of environmental and social management systems implemented in the past.

References

Figge, F. (2001): Wertschaffendes Umweltmanagement. Lüneburg: Center for Sustainability Management.

Figge, F. & Schaltegger, S. (1997): Environmental Shareholder Value. Basel: WWZ and Bank Sarasin.

Figge, F.; Hahn, T.; Schaltegger, S. & Wagner, M. (2001a): Sustainability Balanced Scorecard. Wertorientiertes Nachhaltigkeitsmanagement mit der Balanced Scorecard. Lüneberg: Center for Sustainability Management.

Figge, F.; Hahn, T.; Schaltegger, S. & Wagner, M. (2001b): The Sustainability Balanced Scorecard – A Tool for Value-Oriented Sustainability Management in Strategy-Focused Organisations, paper presented at the Eco-Management and Auditing Conference 2001 in Nijmegen (The Netherlands), forthcoming in: Conference Proceedings of the 2001 Eco-Management and Auditing Conference. Shipley: ERP Environment.

Hahn, T. & Wagner, M. (2001): Sustainability Balanced Scorecard - Von der Theorie zur Umsetzung. Lüneburg: Center for Sustainability Management.

Figge, F.; Hahn, T.; Schaltegger, S. & Wagner, M. (2002): "The Sustainability Balanced Scorecard - Linking Sustainability Management to Business Strategy", Business Strategy and the Environment, (forthcoming).

Kaplan, R. & Norton, D. (1992): “The Balanced Scorecard - Measures that Drive Performance”, Harvard Business Review, Jan-Feb, 71-79.

Kaplan, R. & Norton, D. (1996): The Balanced Scorecard: Translating Strategies into Action. Boston: Harvard Business School Press.

Kaplan, R. S. & Norton, D. (2001): The strategy-focused organization: how balanced scorecard companies thrive in the new business environment. Boston, Mass.: Harvard Business School Press.

Schaltegger, S. & Burritt, R.L. (2000): Contemporary environmental accounting: issues, concepts and practice. Sheffield: Greenleaf.

Tobias Hahn and Marcus Wagner are scientific researchers at the Center for Sustainability Management (CSM), University of Lueneburg, Germany. Dr. **Frank Figge** is senior researcher and lecturer and Prof. Dr. **Stefan Schaltegger** is full professor and head of the CSM. Address: CSM, University of Lueneburg, Scharnhorststr. 1, 21335 Lueneburg, Germany. They can be contacted through Stefan at **schaltegger@uni-lueneburg.de**.