Environmental Management with the Balanced Scorecard
A Case Study of the Berlin Water Company, Germany

Carl-Ulrich Gminder
Institute for Economy and the Environment (IWÖ-HSG), University of St. Gallen
Tigerbergstrasse 2, CH-9000 St. Gallen (Switzerland), Tel.: +41-71-224-2744, Fax -2722
Carl-Ulrich.Gminder@unisg.ch; http://www.gminder.de

Carl Ulrich Gminder has working part time as a research assistant at the Institute for Economy and the Environment since 2001. He also is a freelance consultant and cares for his family and two children. His PhD thesis will focus on sustainable corporate development.
Abstract:

The case study of the Berlin Water Company shows how Corporate Sustainability can be applied even in the difficult changing business environment. The business of water supply and wastewater treatment is changing towards privatisation and higher profitability. New tools and management methods such as the Balanced Scorecard can be introduced and used to integrate Corporate Sustainability in a new way as an important strategic objective for a sound future.

The article explains how Corporate Sustainability can be included in the larger concept of the Balanced Scorecard. It describes and analyses the process of developing and introducing a strategic objective (resource management and protection). It creates indicators and targets for environmental protection into the Balanced Scorecard of the Berlin Water Company. Thus it shows how the Balanced Scorecard can be used as a management tool for environmental management.

Key Words:

Corporate Sustainability, Sustainability Balanced Scorecard, Environmental Management, Business of Water Supply and Wastewater Treatment, Berlin Water Company.
Introduction

It is a strategic issue for a waterworks company to devote resources to the environment. The quality and availability of its main resource - water - is crucial for the successful and responsible business in the mid- and long-term. But waterworks are increasingly focussed on short-term revenues: the private companies feel the pressure of shareholders, the public companies are squeezed by the financial crisis in the public sector.

- How can positive environmental strategies be set and implemented taking these conditions into account?
- How can positive environmental strategies be translated into real substantive action and not just lip service?

These very issues are tackled in a case study about the Berlin Water Company (BWC). The Berlin Water Company is the largest water supply and wastewater treatment company in Germany and serves 3.4 million people. It has a monopoly on the water supply and wastewater treatment business. In 1999, 49.9% of the company was sold to Vivendi and RWE, while the remaining 50.1% are still state owned. The partial privatisation brought tremendous changes in management and organisation. Environmental management was in danger of getting removed from the agenda. Strategic goals were implemented. They focussed only on the shareholders, the customers and the employees and not on societal needs and the environment. A new management tool, the Balanced Scorecard, was launched in order to translate these strategies into action.

The case study shows how through a project of the Environmental Manager and the University of St.Gallen the strategic importance of the environment was enhanced. This was accomplished by integrating sustainability into the Balanced Scorecard. A Sustainability Balanced Scorecard was first developed for the environmental department of the BWC. Using the tool, as well as actively participating in the first rework cycle of the existing Balanced Scorecard of BWC, the environment was discussed and reintroduced as a strategic topic. A company-wide environmental goal was developed, introduced and translated into indicators and measures (cf. Gminder/ Bergner 2002).

Using the Balanced Scorecard for managing sustainability

The concept of the Balanced Scorecard (BSC) was developed in the beginning of the '90s by Kaplan and Norton in order to bridge the gap between strategic management and operating

---

1 The study was carried out within the research project "Sustainability Balanced Scorecard (SBSC)" of the Universities St.Gallen (Switzerland) and Lueneburg (Germany), funded by the German Ministry for Education and Research (BMBF).
daily management (cf. Kaplan/ Norton 1996). The BSC became successful due to simple, yet intelligent design, ease of communication and flexibility of application. It can be applied on the corporate, business unit, department or even employee level. Its potential for use as a management tool for Corporate Sustainability has been discussed for a number of years. Although the existing approaches primarily emphasise the financial aspects, the BSC tool can integrate other sustainability aspects such as the societal and environmental (cf. Schaltegger/ Dyllick 2002, Gminder/ Bieker 2002, Figge et al. 2002, Zingales/ Hockerts 2002, Bieker et al. 2001, SIGMA 2001, Hockerts 2001, Epstein 1996 and Epstein/ Wisner 2001, Johnson 1998).

What is the Balanced Scorecard? One part of the BSC is the management tool that is built up from objectives and:

- Key Performance Indicators (KPI) that measure the results (so-called lagging indicators and targets, e.g. profit or turnover),
- KPIs that measure the progress in achieving the objectives (so-called leading indicators and strategic projects, e.g. the number of customer orders).

The other part of the BSC is the management methodology for translating strategic goals into action and supporting the "management by objectives" idea. The BSC comprises four perspectives: Financial, Customer, Process and Learning & Development. The perspectives are set in order to manage the concerns of the shareholders, customers and employees, and also to manage the aspects of business processes, finance and corporate development. Each unit that applies the BSC can choose the number and naming of the perspectives. A recommended fifth perspective of sustainability is the ability to address stakeholder or shareholder issues properly. Within each perspective, objectives, indicators and measures are all defined. "Balanced" means a balance between soft facts of organisational development and hard facts of finance, a balance between internal and external stakes and a balance of leading and lagging indicators.

A Sustainability Balanced Scorecard (SBSC) is a type of BSC which specifically reflects the issues and objectives of Corporate Sustainability. In order to clarify the sustainability strategies and translate them into action, it is recommended to first design a separate SBSC. Consequently it must be integrated into the "traditional" BSC in order to manage the of sustainability holistically. This will help overcome the distinction between "traditional" financially oriented management and sustainability or environmental management. Figure 1 shows the option of integrating the SBSC either completely or partially. It also shows the option of creating a new, fifth perspective for societal management (for further explanation see Gminder et al. 2002, p.p.121).
If a "traditional" BSC does not yet exist, the development of the BSC and the integration of sustainability can be done in one step (cf. the case study of Volkswagen, Bieker et al. 2002). If a "traditional" BSC does exist, the development of a separate SBSC is not necessary. It may be sufficient to develop new environmental or societal goals, then enriching them with indicators and measures and integrating them in the next review-cycle to update the "traditional" BSC. This last approach was taken in the following case study of the Berlin Water Company.

An important structural element of the BSC is the **Strategy Map**. This is a diagram which shows all perspectives and all objectives at a glance. The objectives are linked by arrows expressing the cause-effect-relationships between the different objectives. It is a rule in a "traditional" BSC to place the financial perspective at the top and end up with all links in that perspective. This rule needs to be discussed when the orientation is skewed toward sustainability. In addition the links between the objectives may be contrary. The earlier a contrary relation is made transparent, the better a company can discuss and decide on such conflicts. Otherwise these conflicts arise later at the operating level and the management is not made aware of the fact that the employees have problems following the BSC.
Integrating Environment into the BSC of the Berlin Water Company

The case study focuses on integrating environmental protection into the Balanced Scorecard on company level. The aim is to describe and analyse the concept of this integration. First of all, the existing company situation is evaluated. The next step is to explain the way how to develop and integrate environmental objectives, indicators and measures into the company BSC. Finally there is a conclusion with the important results.

Action research is the type of research methodology that was used for this case study. First, document analyses and interviews from the CEO to workers in a sewerage maintenance team are applied in order to understand the companies structure, function and develop a way to manage environmental and social issues. Second, four workshops were held to further develop the companies BSC. Finally the results are written down and and presented for validation throughout the company.

The Berlin Water Company/ Berliner Wasserbetriebe (BWC)

The Berlin Water Company (BWC) is the largest water supply and wastewater treatment company in Germany and serves 3.4 million people in the capital Berlin and its surroundings. In 2001, 5500 employees produced a turnover of € 982 million and an operating profit of € 269 million.

One product of the BWC is the drinking water supply. The water is pulled from the ground in Berlin itself. The other product is the treatment and discharge of wastewater which also occurs in the city. Seven water works pull 220 million m³ water from the ground each year and pump them through a 7.800 km pipe network. Each of the water works is ISO 14001 certified. The quality of the water is extremely high for a large city. No disinfection and chlorination is necessary. Seven sewage works are treating 240 million m³ waste water each year transported through a 9.000 km sewerage network. Two of them are ISO 14001 certified. In order to preserve the lakes and rivers within the city where the treated wastewater is discharged, several measures of monitoring and treating the lake and river water quality are carried out.

The waste water treatment is a state-run task and therefore a non-profit business. The water supply is a profit business. Both parts do have a monopoly, however their tariffs are determined by municipal law.
The Management of the BWC

The formal organisation structure starts at the top beginning with the board and their Shared Service Departments, followed next by 14 Business Units, by Departments, Works, Maintenance Units, and after that by groups and teams down to the single employee.

In 2000, the board declared a company vision and their corporate objectives. The vision comprises four areas. One area addresses the very important supply of water and the careful environmentally friendly treatment of sewage. The three others address stakeholder interests - the shareholders, the customers and the employees. From each of these three areas, five to six company objectives are stated, however the environmental and societal area is not operationalised by specific objectives. Many employees do not understand this as they recognise that a clean environment with clean water is necessary for the sound economic base of the company. Leaving environment out was a deliberate decision of the board due to the dominating financial interests of the private and the state shareholders.

The company objectives are the strategic input of the companies Balanced Scorecard. They also serve as objectives for the individual Business Units. Within the units the objectives are translated into personal agreements for all department or team leaders. This recently implemented approach of "management by objectives" is seen as very positive by the employees.

Explicit business strategies do not exist, but implicitly there exist two main strategies. First, the profit orientation strategy places the importance on reducing costs and enhancing the distribution (the water use declined in the ‘90s). The customer orientation strategy places importance on customer satisfaction and training employees. Measures are taken in the framework of projects. Many different types of indicators are used within the company, thus the BSC has the benefit of pointing out the really important ones.

The management and controlling of the BWC uses regular internal reporting which triggers activities if necessary. Institutional controlling processes are not yet set up. The management system is in tremendous transition from the old state oriented planning towards the new business oriented controlling. Therefore the "budget plan" for the coming years is still the most important management tool. The BSC is one of the "change tools" along with a risk management system, the principle of management by objectives and new reporting to the board. But they struggle in acceptance due to the power of the old structures, rules and plans.

The Balanced Scorecard has been used since July 2001 on a company level. The Shared Service Department "Corporate Development" (VUE) is responsible. The company’s objectives are directly integrated as goals of the BSC. Each goal is specified by between two and four indicators and by measures. The reporting cycle of the BSC is not monthly as usual,
but quarterly. The business units have also established BSCs. The CEO pointed out that all BSCs are in the trial phase and need to be completed and enhanced through application and evaluation. Most of the interviewed employees assessed that the position against the budget plan is still too weak and subordinated.

The Management of Environmental Protection

Environmental protection has **strategic importance** for the BWC: Ground water is the crucial resource for the core business of the BWC: selling clean drinking water. Ground water that is more pure saves huge purifying costs. Thus it is a strategic success factor for the BWC. Strong treatment processes for wastewater are of the same importance. The quality of the discharged water influences the ground water, because exploitation and discharge is done in the same geographical area. In addition the environmental protection is relevant in the mechanical processes of the works, the burning of sewage sludge and eco-efficiency in the administration.

Environmental protection is a decentralised task within the business units, looked after by environmental managers, -co-ordinators and skilled workers. However they are centrally supported and co-ordinated by the Shared Service **Department for Operations Officers and Environmental Affairs (VBU)**. VBU has 14 employees whose tasks are mostly determined by the legally defined officers for waste, water protection, immission, accident and radiation protection. VBU is in charge of the environmental organisation and legal compliance. It checks the works and operates as radar for societal and legal trends. In addition it conducts environmental training.

Since the partial privatisation, the main focus has been to optimise the formal organisation and the **management and controlling** of environmental protection. Figure 2 shows this:

---

**Figure 2: Organisation of environmental protection (Source: Gminder/ Bergner 2002, p. 205)**
**Indicators** are used in the framework of internal environmental data surveys, e.g. the results of water analysis. There are 480,000 analysis from 78,000 samples made each year. The costs and quantity of waste are managed within the SAP software. Data from the water and sewage works are reported monthly. The BWC does not publish an environmental report, but supply data for the reports of Vivendi and RWE.

**The Integration of Environment into the Balanced Scorecard**

For the process of integrating environmental protection into a BSC, it is necessary and very helpful to develop objectives, indicators and measures according to the structure of the BSC. Apart from the formal structure it is necessary to integrate it into the organisational processes, e.g. the review processes of the BSC. It also important to integrate it in the organisational hierarchy and the minds of the employees, e.g. co-operate with the department which manages the BSC and get the support from the board or the CEO. Especially *"soft", more informal implementation* (like talking to people, convincing them and including them in development processes) is far more important for the success than the "hard", more formal implementation (like defining objectives, indicators and measures). But it needs both! The head of the VBU department was smart regarding the "soft" implementation. A sound "hard" implementation was guaranteed by the support of the department VUE which manages the BSC. The company level was chosen as adequate for integrating environmental protection. The following chart shows the steps of the integration process:

![Figure 3: Process of integrating environmental protection into the Balanced Scorecard of the Berlin Water Company BWC (Source: Gminder/ Bergner 2002, p. 215)](image)

Before starting workshops, a **strategic clarification** about environmental protection was necessary on the board level. This clarification was not easy, because the company struggled with the change from non-profit bureaucracy to profit management and the opinion of the four board members was different. After three months of uncertainty, the Shared Service Departments responsible for the BSC (VUE) and for the Environment (VBU) took
action themselves and decided to start a series of four workshops and develop proposals for the company objectives as well as operationalising them for the BSC.

Participating in the **workshops** were employees of the two departments and employees from the department of water and the sewage works co-ordination. First, the term "Sustainability" needed to be clarified. The solution of the group focussed on environmental protection and excluded social and economic sustainability. The aim of the group was to develop usable results, not "dreams" which would stress the company too much in the current situation. The aim was reasonable in order to produce acceptable results, but it turned to a constraint when it cut progressive proposals too early.

After the clarification of sustainability, **environmental objectives** were developed in a brainstorming session. They were bundled, grouped and reduced. The reduction was one condition of acceptance. The results were a mixture of objectives and measures, thus a separation was also necessary. During this process it turned out that a new strategic objective was phrased: "Protection of the Natural Resources (Water, Soil, Air)". It was to be put on the level of the other 15 company objectives.

In the next step, this objective was attached to the adequate **perspective** in the BSC. Besides the perspective of the employees (Learning), all of the perspectives were discussed, as the protection of the natural resources serves the financial wealth in the long-term. It serves the customers through its good water quality and it is a goal achieved by good process practices. The creation of a separate sustainability perspective seemed not to be reasonable, if it is only one goal in that perspective. Finally, the process perspective was chosen as the most pragmatic solution. Other environmental goals could be subordinated to other company objectives and therefore automatically to the relevant perspectives. Most of them were also put into the process perspective, e.g. "Enhancing material and energy efficiency" related to the objective "Increasing productivity".

The **clarification on strategic level** was emphasised at the same time. The defensive attitude towards environment changed during the case study. In spring 2002 the CEO defined "environmental awareness" as one of the five necessary changes for the year. Observing the definition of the strategic "natural resources" objective and the ongoing discussion about sustainability, it became obvious that environmental protection could not be suppressed due to political reasons. Consequently, the proposal of the SBSC-Working group was taken into account in the strategic planning and review process. It was presented at the annual conference for upper management. It was decided by the board and the heads of the business units to be integrated into the BSC, even though the number of goals was reduced from 16 to 12 and one board member was still strongly opposed to it. But no update to the
vision was made. The board agreed to issue a completely new vision and new company objectives after 2004.

**Indicators** needed to be defined and discussed. Prerequisite was a low number, in average one to three per goal. But aggregation was possible. E.g. for the objective "Increasing productivity" (where eco-efficiency is subsumed) the costs per m³ water and wastewater get measured. In order to calculate them, the working group determined that waste costs, energy costs, wastewater fee and compliance penalties should be taken into account. Another form of aggregation is to construct an index. Hence an environmental pollution index was designed, including several emission figures of CO₂, SO₂, CH₄, Mercury etc. This index was one of the five indicators for the natural resource objective. The others are:

- Approved amount of raw water per average daily exploitation rate (in order to control the quantitative use of ground water);
- Cleaned amount of ground water per polluted amount of ground water (in order to control the qualitative use of the ground water);
- Number of certified works according to ISO 14001 or EMAS;
- Expenditure for research and pre-emptive measures for resource protection, ground water management, soil protection as well as lake and river management.

"No other objective has so many indicators" said the vice head of the VUE department. The head of VBU did not like the index because of its aggregation: "Does this number tell us anything?" The pressure of **reducing** goals or indicators is painful, yet it increases the clarity and simplicity of the controlling process. It forces more detailed management on lower hierarchy levels.

The last step was the construction of the **Strategy Map**. The cause-effect-relationships were discussed and determined. All objectives related to sustainability were identified and linked. An interesting picture of Corporate Sustainability of the Berlin Water Company evolved throughout all perspectives as shown by Figure 4:
Figure 4: Sustainability oriented Strategy Map of the Berlin Water Company (BWC)(Source: Gminder/ Bergner 2002, p. 223)

Conclusion

The results of the case study work had high practical benefit for the Berlin Water Company. An acceptable solution was developed for managing environmental protection by using the Balanced Scorecard.

From the theoretical point of view, the case study shows that the Balanced Scorecard is a management tool which is flexible enough to deal with environmental and societal issues. It offers a method to translate strategies of Corporate Sustainability (CS) into action and integrate them into the general management. Hence sustainability no longer has to be managed apart from other management tasks and systems. Yet it shows that environmental protection is only one of several strategic objectives of a company. It can not be managed in enough detail as an Environmental Manager would need. Thus a company Sustainability
Balanced Scorecard neither substitutes the Environmental Management in part nor can it replace an Environmental Management System totally.

The SBSC can be a successful way to bring discussions about Corporate Sustainability issues to the attention of general management. However, the tool is only an enabler. to get people to sit down and talk about the issues. The real integration takes place in the minds of the employees, especially the top management. The BSC enables workshops, discussions, meetings and communication to clarify the importance of Corporate Sustainability. The BSC fosters translating CS into action by integrating it into general management and controlling and not just paying lip service to the issues.

Water works management is under large financial pressure at the moment, whether it is privately or municipally owned. Thus other issues seem far more important than Sustainability. All thoughts and actions are checked against profitability. Hence environmental protection is quickly filed under costs or expenses. And it is incorrectly viewed that in order to reduce costs, it is necessary to reduce environmental protection. This logic has short term benefits, but the mid- and long term costs are far higher: "In Paris they need 18 steps for purifying the drinking water" the vice head of VUE reported, "in Berlin we just need two, because our ground water is still so clean." The importance of a clean environment and clean water resources for a water company was a permanent topic in workshops and interviews. It should not be subordinated to productivity and quality for political reasons. Most employees "feel", acknowledge and even demand a pro-environment policy from top management.

The case study shows that the discussion of environmental protection leads to a revaluation of the "new" (profit only) management way of thinking. Hence the "new" management tool BSC places the topic on the agenda. Otherwise environmental protection is minimised only to meet legal compliance level. This does not reflect the strategic importance pro-environment policies have in the actual business of water supply and wastewater treatment. As summarised by a member of the workshop team: "The research project was helpful to discuss with the board, to get clarification about just how important a clean environment is for a clean product. And that this issue should be not neglected, just because the current focus is on profit."
List of References:


