# The Forgotten Link between "Green" and Economic Success

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## Environmental Management as the Crucial Trigger between Environmental and Economic Performance


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# 1 INTRODUCTION

The link between being „green" and being an economically successful company has been a core topic of the corporate environmental management literature for many years (see, e.g., Jaggi & Freedman 1992,Cohen et al. 1995, Feldman et al. 1996, White 1996, Hamilton 1995, Hart & Ahuja 1996, Johnson 1995, Klassen & McLaughlin 1996, McGuire et al. 1988, Morris 1997, Russo & Fouts 1997, Steinle et al. 1998, Butz & Plattner 1999). Some assume that environmental protection mainly causes costs in a company whereas others believe that environmental protection generally pays off and thus improves the economic success (e.g. Cohen et al. 1995, Porter & van der Linde 1995, WBCSD 1997). The entirety of empirical studies seems to provide arguments for both sides, however there seems to be an overweight of studies supporting the hypothesis that good environmental performance pays off, or turned the other way around - that bad performance is punished.

One reason for these differences in the results of empirical studies may be *different data sets* used. The relationship between environmental engagement and profit may differ depending on the regulatory regime in a country, the cultural setting, the market behaviour, the industries or size of companies analysed, etc.

Another reason highlighted here, maybe the *lack of a clear theoretical framework* to investigate the links between environmental performance and economic performance. The theoretical framework discussed in this paper suggests that *not the pure fact of being green but the way how the environmental performance has been achieved* influences whether the correlation between environmental and economic performance is positive or negative. Based on this we give some recommendations for further research within this field.

# 2 ENVIRONMENTAL ISSUES INFLUENCE BUSINESS AND BUSINESS INFLUENCES ENVIRONMENTAL PROTECTION

On one side it has been stated many times that company management often does not pay enough attention to the fact that environmental issues have become an economic reality (e.g. Buchholz 1993, Porter & van der Linde 1995, Welford 1994). Environmental issues influence the costs and income of a company in both directions. Environmental issues therefore have a direct influence on the economic success of a company (see Figure 1).

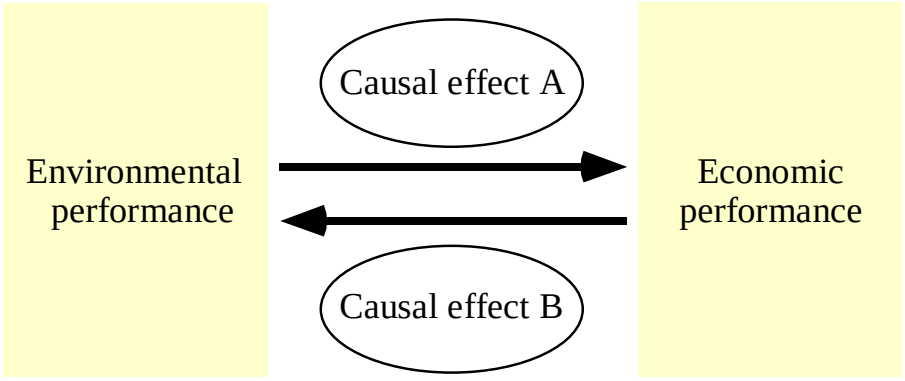


Figure 1: Current Approaches of Analysis

One approach to analyse whether the hypothesis that environmental protection is good (or bad) for the economic performance is to use regression analysis with economic performance as dependent variable and environmental performance as independent variable for a large sample of companies. Another approach is to conduct event studies investigating stock market reactions to “environmental news”, (causal effect A).

The second hypothesis is that good economic performance drives environmental performance. (Causal effect B in Figure 1). This hypothesis is often based on the believe that good environmental performance is a kind of luxury good for a company when it has reached a high level of economic success. Ytterhus & Sjaker (1998) find that managers perceive good financial conditions as one of the most important success factors for improving the environmental performance. One typical way to test whether only economically successful companies will be good environmental performers in the long run is to correlate economic with environmental performance for long time-series. When taking a less mechanistic view the argument can be put forward that those companies will be more economically successful which know how to improve their environmental performance in the most economical manner.[i]

However, these straight links do neither seem to exist in practice nor do they stand up to a more thorough theoretical analysis. From a management perspective there is no “natural or mechanical law automatically linking” environmental with economic performance. Some could argue that in some cases regulations might create obvious links between environmental and economic performance. This may hold true in specific cases where the regulatory tools give strong economic incentives for continuos improvements in environmental performance. However, if we give up simplistic assumptions it becomes clear that the question to what extent environmental protection activities result in an improvement of the economic success depends on a variety of factors such as the consumers willingness to pay for environmentally friendly goods in a given

market, the kind of environmental and health regulations in a country, the stakeholder pressure in different industries, the level of technological development, etc. Furthermore, environmental issues must be of a certain maybe even major financial importance to have some impact on the company's economic performance. In addition, the company must face some degree of competition in the market because otherwise economically inefficient behaviour does not necessarily have a measurable impact on the profit.

*Given the diversity of constantly changing factors which may influence the relationship between environmental and economic performance it seems that the way how these factors are identified and how the company management acts in respect to them may be of significant influence on the economic performance.* Moreover, as with management success in general the economic success of environmental protection activities will depend on the quality of managerial decisions taking various factors into account.

To judge whether more environmental protection activities will be economically rewarding company management would have to identify the specific set of restrictions and incentives it faces. Furthermore, the management should be able to identify environmentally induced economic opportunities and threats. As a next step objectives and goals would have to be defined, plans to be developed and concrete actions to be taken. The respective environmental protection activities will then result in new and different environmental profile, which in turn may result in cost savings and/or market reactions.

Given companies in a competitive market where environmental protection is economically relevant, it is thus reasonable to assume that the relation between environmental and economic performance depends on the *kind of management activities*, strategies and concepts and whether they are applied correctly in the right situations rather than on any mechanistic causal link. The importance of the kind of corporate environmental management for the environmental and economic performance of a company and the economy as a whole cannot be overestimated. If a company is able to increase its economic success by a progressive environmental management it will face less company-internal and company-external distribution conflicts and will therefore be a shining example for others to follow.

The interrelated effects between environmental protection and economic success should therefore be considered more carefully and their explicit integration should be pursued more systematically. In this sense corporate environmental management is a concept which helps managers to systematically focus entrepreneurial efforts to reduce environmental impacts of a company in the most economically efficient manner possible.

## 3 NOT EVERY KIND OF ENVIRONMENTAL MANAGEMENT INCREASES THE ECONOMIC SUCCESS. A THEORETICAL FRAMEWORK

Two "schools of thought" have emerged regarding the effect of corporate environmental protection on the economic success. Some feel that the current level of corporate environmental protection often conflicts with other business objectives, particularly that of increasing the economic success. This postulated relation is shown in Figure 2 by line ES0-E-F-D. Beginning at a certain level of economic success (e.g. a certain shareholder value $ES_0$) every environmental protection activity (moving to the right in Figure 2) will reduce the economic success.

The negative marginal impact on the economic success can be expected to increase. Below point D in Figure 2, respectively an economic success of 0 and the amount of environmental protection of $EP_0$, the company gets unprofitable.

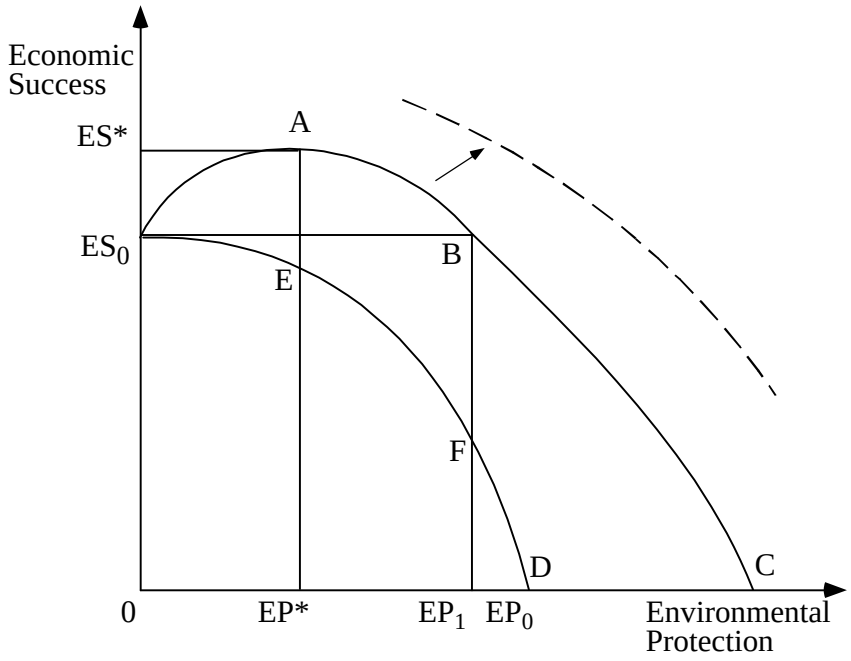


Figure 2: Possible relations between corporate environmental protection and economic success (similar to Schaltegger 1989)

Others believe that not only is the current level of corporate environmental protection economically sustainable, but also that the environmental protection practised by a company even has a beneficial effect on its economic success (e.g. point A and thus

ES* in Figure 2 is achieved with the amount EP* of environmental protection). However, nobody will actually believe that an indefinite number of pollution prevention activities will still increase the economic performance. Net marginal benefits from environmental protection will be decreasing (picking the low hanging fruit first) and sooner or later the increased environmental effort will represent net costs (after point A in Figure 2).

There may be several reasons for the different views on the relationship between environmental performance and economic success. The perception of a pure trade-off may stem from a feeling that there are economic disincentives for corporate environmental protection, that the firm is incapable to take advantage of economic opportunities, a strong focus on short-term profit or pure ignorance.

In most industries with a certain level of environmental impacts there are economic incentives for some degree of environmental protection. We can thus assume that the suggested functions do not only represent a perception of the link between environmental and economic performance but that they rather represent worst and best environmental practice. The upper curve shows good environmental management materialised through both cost efficiency and market gains, while the lower curve represents poor (costly) management. As the company on the upper curve in Figure 2 manages its environmental protection better than a company on the lower curve the slope A-B-C is flatter than E-F-D because of the lower marginal costs (a) of environmental protection for the second company.

Thus, the curves express that the economic success depends on the kind of environmental management applied and how well it takes the specific situation of the company into account.

In reality the described functions may not be as smooth as shown in our model. Fixed costs of environmental protection, for example to establish an environmental management system would cause “steps” in the cost function. The same may occur for the revenues, for example due to sudden shifts in demand when passing a threshold value for environmental performance (e.g. due to image gains or product labels).

Several factors may lead to a shift of the curve to the right (dashed curve in Figure 2). Development of environmental technologies reduce the marginal costs of environmental protection over time, changes in consumer preferences increase the market gains of good environmental performance, regulatory changes reward good environmental performance, etc.

With this interpretation the model proposes a wide range of possible economic outcomes between curve $ES_0$-E-F-D and curve $ES_0$-A-B-C in Figure 2. The population of firms

may be somewhere in the space between the two curves. It is thus not surprising that empirical studies simply correlating environmental and economic performance as discussed in Section 1 lead to very different results. Picking different samples from the same wide range of companies spread between the curves may lead to different results unless the samples are very large. Furthermore, the curves may vary both in time and between countries or continents providing different sets of companies analysed or changes in the quality of environmental management employed.

*First, the environmental performance can vary at a given level of economic success.* Point B in Figure 2 reflects the same economic success as point ES0. The difference is that one point reflects environmental ignorance whereas the other represents environmental responsibility.

Second, the economic effect of corporate environmental protection can vary at any given environmental performance level. *For instance at EP* the economic success can vary between A and E, or at $EP_1$ the economic performance may be somewhere between B and F.*

## 4 CONCLUSIONS

The proposed model to structure the relation between economic and environmental performance provides two sets of conclusions, firstly, for researchers who want to carry out empirical studies and, secondly, for company management. Both sets of conclusions are based on the consideration that the kind rather than the amount of environmental management primarily influences the economic success.

### 4.1 Conclusions for Empirical Studies

Corporate environmental protection has an impact on the economic success and thus the enterprise value. However, the crucial question for empirical research on this topic is not just how much environmental protection is practised by a company but rather by the *combination* of what *level* of environmental protection has been achieved and what *kind* of environmental protection is practised by a company.

The proposed framework implies that empirical studies should not just correlate two data sets representing environmental performance or protection activities and economic performance (as in Figure 1), but rather investigate the effect of different environmental management *concepts* at given environmental performance levels on the eco-efficiency - the economic and environmental performance respectively (Figure 3).

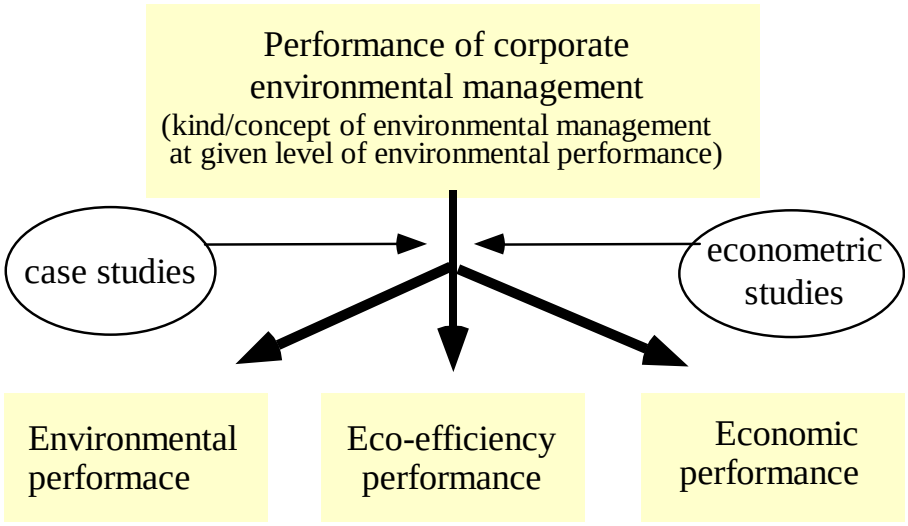


Figure 3: Management as the trigger between environmental and economic performance

In other words, to understand and measure the links between environmental protection and economic success it is crucial to analyse the quality of environmental management in regard to the range of possibilities to improve the environmental performance in the most economic manner.

Two research strategies to investigate what kind of environmental management results in both, an improvement of environmental and economic performance, are basically possible. A first research strategy is to draw the focus away from the typical large sample statistical research approach to more in-depth case studies. The *case-study-based* strategy tries to test the practical relevance of theoretically determined factors driving the economic effects of corporate environmental management by analysing specific companies. An example of this strategy is the case-study tests of the effects of the drivers of environmental shareholder value (Schaltegger & Figge 1997). Complex processes and links may sometimes be investigated better in case studies as they allow to consider various factors simultaneously.

However, case studies, most often based on small samples, may result in widely different answers of whether it "pays to be green". If we assume that most firms have chosen an environmental profile lower than EP* and that few companies are very inefficient in their environmental management then any analysis of the company's profit will reveal a positive correlation between environmental performance and economic success. On the other hand, if many companies are positioned to the right of the economically optimal level of environmental protection (EP>EP*) negative correlations may result.

The second, *statistically based strategy* attempts to estimate the ex post economic impact of good environmental management. According to the proposed model in Figure 2 two (linked) kinds of questions can be analysed:

- *The economic effects of different environmental management concepts:* "Comparable" companies being at the same level of environmental performance are compared. This provides information about the vertical distance between line ES0-D and curve ES0-A-B-C in the model in Figure 2 (e.g. E-A at level EP*) and thus the different economic effects of various corporate environmental management concepts applied in companies with comparable environmental performance levels. This kind of analysis provides information about the "transformation curve" ES0-A-B-C between environmental and economic performance in the model in Figure 2 if the best observed practice is equal to the theoretically best approach.

  Going along with this strategy requires firstly that groups of environmental management concepts (e.g. eco-controlling, minimum compliance with EMAS or ISO 14001 standard, having no systematic environmental management system, etc.) and the relevant factors driving the economic effects of corporate environmental management are distinguished. Secondly, these different concepts and factors must then be (made) measurable for company-external analysts and the respective data set have to be compiled in order to carry out the statistical analysis. The fact that other factors influence the economic success, such as the regime of general business regulations, the available technology, the development of the world economy, etc. underlines the necessity to control for other variables by isolating their effects in the analysis.

- *The environmental and economic effects of a given environmental management concept applied in comparable companies:* Companies with the same environmental management concept (e.g. eco-controlling) but different levels of environmental and economic performance are compared. The results of such analysis could be used to compare the actually realised eco-efficiency of different management approaches. This kind of analysis provides information about the best, i.e. the most eco-efficient, observed practice of each management concept. This requires again that different environmental management concepts are characterised and distinguished very clearly. Only then comparisons could be made on an empirical basis.

### 4.2 Conclusions for Environmental Management

All points in the area $ES_0$-A-B-$ES_0$ in Figure 2 show so called "no-regret-solutions" compared to the original point $ES_0$. However, economically oriented company management wants to achieve point A because it is superior to the initial point $ES_0$ from an economic perspective

Thus, company leaders who completely ignore voluntary environmental protection activities also ignore some important financial issues and give away economic opportunities. This may economically make sense in a world of many excellent business opportunities which are larger than the environmentally driven ones. However, managers also have the possibility to delegate jobs. This always makes sense when the realisation of an environmentally induce opportunity results in a net economic profit. To analyse whether this is the case requires that the management is not ignorant but is rather aware of potential business opportunities and that it delegates the respective analysis. Or in other words, environmental ignorants are bad economists and managers.

Furthermore, the kind of environmental management creates the difference between the economic performance of comparable companies at a given level of environmental performance. It is therefore obvious that the choice for the economic management of corporate environmental protection is not just to find the optimal level of environmental protection but rather to first *choose the best matching (i.e. cost efficient) environmental management concept and to initiate environmental learning processes in the company*.

Given the large number and the fast development of different environmental management approaches management should not delegate the design of the environmental management concept to anybody. This challenging procedure should rather be understood as a managerial decision and design process where the appropriateness of different environmental management concepts is analysed profoundly in the context of the specific situation and in regard to the main environmental problems of the company.

The relation between corporate environmental protection and economic success can also be influenced by environmentally beneficial innovations so that the curve ES0-A-B-C shifts into the direction of the dashed curve in Figure 2. In this context it has to be mentioned that an ISO 14001 or EMAS certificate is not a sufficient argument to judge the economic or environmental effects of an environmental management system because of the openness of the standard.

Only after having designed and established the best environmental management concept, management is, secondly, to optimise the amount of corporate environmental protection. From an economic perspective point A in Figure 2 should be chosen and the amount of environmental protection should be adapted to an innovation-shifted transformation curve $ES_0$-A-B-C. It is only now, after having optimised the corporate environmental management system that choosing the economically desired level of environmental performance reflects social responsibility and the comparative valuation of economic and environmental goals.

## LITERATURE

Buchholz, R. 1993. Principles of Environmental Management. The Greening of Business. Englewood Cliffs, N.J.: Prentice Hall.

Butz, C. & Plattner, A. (1999). Nachhaltige Aktienanlagen: Eine Analyse der Rendite in Abhängigkeit von Umwelt- und Sozialkriterien. Basel: Study of Sarasin & Cie.

Cohen, M.; Scott, A. & Naimon, J. 1995. Environmental and Financial Performance: Are They Related?, Washington D.C.: Investor Responsibility Research Center (IRRC).

Feldman, S. J.; Soyka, P. A., & Ameer, P. 1996. Does Improving a Firm's Environmental Management System and Environmental Performance Result in a Higher Stock Price? Working Paper, Fairfax, VA.: ICF Kaiser International.

Hamilton, J. 1995. Pollution as News: Media and Stock Market Reactions to the Toxic Re-lease Inventory Data. Journal of Environmental Economics and Management, Vol. 28, 98-113.

Hart, S., & Ahuja, G. 1996. Does It Pay to Be Green? Business Strategy and the Environment, Vol. 5, No. 1.

Jaggi, B. & Freedman, M. 1992. An examination of the impact of pollution performance on economic and market performance: pulp and paper firms, Journal of Business Finance and Accounting, September.

Johnson, S. D. 1995. An Analysis of the Relationship Between Corporate Environmental and Economic Performance at the Level of the Firm. University of California, Irvine: Doctoral Dissertation.

Klassen, R. D., & McLaughlin, C. P. 1996. The Impact of Environmental Management on Firm Perfomance. Management Science, Vol. 42, No. 8, 1196-1214.

McGuire, J., Sundgren, A., & Schneeweis, T. 1988. Corporate Social Responsibility and Firm Financial Performance. Academy of Management Journal, Vol. 31, December, 854-872.

Morris, S. 1997. Environmental Pollution and Competitive Advantage: An Exploratory Study of U.S. Industrial-Goods Manufacturers. Paper presented at the annual meeting of the Academy of Management, Boston (Mass.).

Porter, M., & van der Linde, C. 1995. Green and Competitive: Ending the Stalemate. Harvard Business Review, September, 127-132.

Russo, M., & Fouts, P. 1997. A Resource-Based Perspective on Corporate Environmental Performance and Profitability. In: Academy of Management Journal, June 1997, 534

Schaltegger, S. & Burritt, R. 2000. Contemporary Environmental Accounting, London: Greenleaf.

Schaltegger, S., with Mueller, K., & Hindrichsen, H. 1996. Corporate Environmental Accounting. New York: John Wiley & Sons.

Schaltegger, S. & Figge, F. 1997. Environmental Shareholder Value, WWZ/ Sarasin Basic Research Study No. 54, Basel: WWZ.

Schaltegger, S., & Sturm, A. 1998. Eco-Efficiency By Eco-Controlling. Zurich: VDF.

Spitzer, M. 1992. Calculating the Benefits of Pollution Prevention. Pollution Engineering, September, 33–38.

Steinle, C., Thiem, H., & Böttcher, K. (1998). Umweltschutz als Erfolgsfaktor. Mythos oder Realität? Ergebnisse einer empirischen Studie (Environmental Protection as a Factor of Success. Myth or Reality?). Journal of Environmental Policy and Law (Zeitschrift für Umweltrecht und Umweltpolitik), N0. 1, 61–78 .

Walley, N., & Whitehead, B. 1994. It's Not Easy Being Green. Harvard Business Review, Vol. 72, No. 3, 46-52.

WBCSD (World Business Council for Sustainable Development) 1997. Environmental Performance and Shareholders Value. Geneva: WBCSD.

Welford, R. 1994. Cases in Environmental Management and Business Strategy. London: Pitman.

Welford, R., & Gouldson, A. 1993. Environmental Management and Business Strategy. London: Pitman.

White, M. A. (1996). Corporate Environmental Performance and Shareholder Value, Internet: http://etext.lib.virginia.edu/osi/.

Ytterhus, B.E og Sjaker, O. C. (1998). Grip Barometeret '98; En kartlegging av miljøtilpasningen i: produksjon av møbler, bank og forsikring, bygg og anlegg, varehandel, transport, turisme. Handelshøyskolen BI og GRIP senter, Oslo.

## ENDNOTE

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[i] On the other side, assuming some degree of competition, only economically oriented, i.e. efficient, environmental protection will sustain. An environmentally friendly company which is not economically successful will sooner or later disappear from the market and therefore also its environmentally beneficial activities. Even worse, green idealists will - after having received some “pats on the back”in the beginning - be a deterrent example for other, economically successful companies.

# Publikationen

## 2006

Albrecht, P. (2006): Nachhaltigkeitsberichterstattung an Hochschulen. Diskussion möglicher Ansatzpunkte und ihrer Konsequenzen für die Praxis. Lüneburg: Centre for Sustainability Management e.V. & Institut für Umweltkommunikation.

Brix, K.; Bromma, B. & Jaenisch, J. (2006): Nachhaltiges Unternehmertum. Diskussion des Konzepts an Unternehmensbeispielen vom Bionier bis zum sustainable Entrepreneur. Lüneburg: Centre for Sustainability Management e.V.

Fitschen, U. (2006): Umweltmanagement ausgewählter Großveranstaltungen – Effektiver Umweltschutz oder Greenwashing? Lüneburg: Centre for Sustainability Management e.V.

Knolle, M. (2006): Implementierung von Sozialstandards in die Wertschöpfungskette von Bekleidungsunternehmen durch die Bildung von Kooperationen. Lüneburg: Centre for Sustainability Management e.V.

Pinter, A. (2006): Corporate Volunteering in der Personalarbeit: ein strategischer Ansatz zur Kombination von Unternehmensinteresse und Gemeinwohl? Lüneburg: Centre for Sustainability Management e.V.

## 2005

Hellmann, K. (2005): Formen des Biodiversitätsmanagements. Ein öffentlicher und ein unternehmerischer Ansatz im Vergleich. Lüneburg: Centre for Sustainability Management e.V.

Schaltegger, S. & Hasenmüller, P. (2005): Nachhaltiges Wirtschaften aus Sicht des "Business Case of Sustainability." Ergebnispapier zum Fachdialog des Bundesumweltministeriums (BMU) am 17. November 2005. Lüneburg: Centre for Sustainability Management e.V.

Wagner, M. (2005): An Estimation of the Total Benefit Value of the British Countryside for Recreational Activities. Discussion Paper. Lüneburg: Centre for Sustainability Management e.V.

## 2004

Dubielzig, F.; Schaltegger, S. (2004): Methoden transdisziplinärer Forschung und Lehre. Ein zusammenfassender Überblick. Lüneburg: Centre for Sustainability Management e.V.

Herzig, C. (2004): Corporate Volunteering in Germany. Survey and Empirical Evidence. Lüneburg: Centre for Sustainability Management e.V.

Herzig, C. & Schaltegger, S. (2004): Nachhaltigkeit in der Unternehmensberichterstattung - Gründe, Probleme, Lösungsansätze. Lüneburg: Centre for Sustainability Management e.V.

Wagner, M. (2004): Firms, the Framework Convention on Climate Change & the EU Emissions Trading System. Corporate Energy Management Strategies to address Climate Change and GHG Emissions in the European Union. Lüneburg: Centre for Sustainability Management e.V.

Zöckler, J. (2004): Die Einführung des Emissionshandels in Deutschland. Eine polit-ökonomische Analyse unternehmerischer Interessenvertretung am Beispiel der Elektrizitätswirtschaft. Lüneburg: Centre for Sustainability Management e.V.

## 2003

Burandt, S.; Döscher, K.; Fuisz, S.-K.; Helgenberger, S. & Maly L. (2003): Transdiziplinäre Fallstudien in Lüneburg. Beschreibung eines Entwicklungskonzepts hin zur Erweiterung des Curriculums an der Universität Lüneburg. Lüneburg: Centre for Sustainability Management e.V.

Frenzel, S. (2003): Operative Umsetzung der projektorientierten Kyoto-Mechanismen bei Kraftwerken. Erarbeitung eines Instruments. Lüneburg: Centre for Sustainability Management e.V.

Herzig, C.; Rheingans-Heintze, A.; Schaltegger, S. & Tischer, M. (2003): Auf dem Weg zu einem nachhaltigen Unternehmertum. Entwicklung eines integrierten Konzepts. Lüneburg: Centre for Sustainability Management e.V.

Herzig, C.; Rheingans-Heintze, A. & Schaltegger, S. unter Mitarbeit von Jeuthe, K. (2003): Nachhaltiges Wirtschaften im Handwerk. Stand der Praxis in Hamburg, Nordrhein-Westfalen und Thüringen. Lüneburg: Centre for Sustainability Management e.V.

Kim, K. (2003): Kriterien der interaktiven Unternehmenskommunikation im Internet. Lüneburg: Centre for Sustainability Management e.V.

Lühmann, B. (2003): Entwicklung eines Nachhaltigekeitskommunikationskonzepts für Unternehmen. Modellanwendung am Beispiel T-Mobile Deutschland GmbH. Lüneburg: Centre for Sustainability Management e.V.

Wagner, M. (2003): The Porter Hypothesis Revisited: A Literature Review of Theoretical Models and Empirical Tests. Lüneburg: Centre for Sustainability Management e.V.

## 2002

Bilecen, E. & Kleiber, O. (2002): Erholung im Wald: Des einen Freund des anderen Leid. Kosten für Waldeigentümer und deren Einflussfaktoren. Lüneburg: Centre for Sustainability Management e.V.

BMU & BDI (Hrsg.); Schaltegger, S.; Herzig, C.; Kleiber, O. & Müller, J. (2002): Nachhaltigkeitsmanagement in Unternehmen. Konzepte und Instrumente zur nachhaltigen Unternehmensentwicklung. Lüneburg: Centre for Sustainability Management e.V.

Figge, F. (2002): Stakeholder und Unternehmensrisiko. Eine stakeholderbasierte Herleitung des Unternehmensrisikos. Lüneburg: Centre for Sustainability Management e.V.

Figge, F. (2002): Stakeholder Value Matrix. Die Verbindung zwischen Shareholder Value und Stakeholder Value. Lüneburg: Centre for Sustainability Management e.V.

Figge, F. & Hahn, T. (2002): Environmental Shareholder Value Matrix. Konzeption, Anwendung und Berechnung. Lüneburg: Centre for Sustainability Management e.V.

Figge, F. & Hahn, T. (2002): Sustainable Value Added. Measuring Corporate Sustainable Performance beyond Eco-Efficiency. 2nd, revised edition. Lüneburg: Centre for Sustainability Management e.V.

German Federal Ministry for the Environment and Federation of German Industries (Eds.); Schaltegger, S.; Herzig, C.; Kleiber, O. & Müller, J. (2002): Sustainability Management in Business Enterprises. Concepts and Instruments for Sustainable Development. Lüneburg: Centre for Sustainability Management e.V.

Hellmann, K. (2002): Ermittlung von Präferenzen verschiedener Anspruchsgruppen für die Landschaft in einem Naturschutzgebiet. Anwendung einer Conjoint-Analyse am Fallbeispiel der Lüneburger Heide. Lüneburg: Centre for Sustainability Management e.V.

Kim, K. (2002): Methoden zur Evaluation der Nachhaltigkeit von Unternehmen. Kategorisierung und Analyse ihrer Stakeholderorientierung. Lüneburg: Centre for Sustainability Management e.V.

Petersen, H. (2002): Sustainable Champions. Positionierung von Marktführern im Umweltbereich. Eine empirische Untersuchung. Lüneburg: Centre for Sustainability Management e.V.

Trautwein, S. (2002): Chancen und Probleme des betriebsinternen $CO_2$-Zertifikatehandels - am Beispiel des Otto Versand, Hamburg. Lüneburg: Centre for Sustainability Management e.V.

Wagner, M. (2002): Empirical identification of corporate environmental strategies. Their determinants and effects for firms in the United Kingdom and Germany. Lüneburg: Centre for Sustainability Management e.V.

Wagner, M. & Schaltegger, S. (2002): Umweltmanagement in deutschen Unternehmen - der aktuelle Stand der Praxis. Lüneburg: Centre for Sustainability Management e.V.

## 2001

Burritt, R.L. & Schaltegger, S. (2001): Eco-Efficiency in Corporate Budgeting. Lüneburg: Centre for Sustainability Management e.V.

Deegen, T. (2001): Ansatzpunkte zur Integration von Umweltaspekten in die „Balanced Scorecard“. Lüneburg: Centre for Sustainability Management e.V.

Figge, F. (2001): Biodiversität richtig managen - Effizientes Portfoliomanagement als effektiver Artenschutz. Lüneburg: Centre for Sustainability Management e.V.

Figge, F. (2001): Wertschaffendes Umweltmanagement. Keine Nachhaltigkeit ohne ökonomischen Erfolg. Kein ökonomischer Erfolg ohne Nachhaltigkeit. Frankfurt: Fachverlag Moderne Wirtschaft in Zusammenarbeit mit PriceWaterhouseCoopers und dem Centre for Sustainability Management (CSM) e.V.

Figge, F. (2001): Environmental Value Added – ein neuer Ansatz zur Messung der Öko-Effizienz. Lüneburg: Centre for Sustainability Management e.V.

Figge, F.; Hahn, T.; Schaltegger, S. & Wagner, M. (2001): Sustainability Balanced Scorecard. Wertorientiertes Nachhaltigkeitsmanagement mit der Balanced Scorecard. Lüneburg: Centre for Sustainability Management e.V.

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

Hroch, N. & Schaltegger, S. (2001): Wie gut berücksichtigen Umwelterklärungen und -berichte zentrale umweltpolitische Themen? Vergleichende Untersuchung am Beispiel von Angaben über $CO_2$-Emissionen und Energieverbrauch für 1995/96 und 1998/99. Lüneburg: Centre for Sustainability Management e.V.

Petersen, H. (2001): Gewinner der Nachhaltigkeit. Sustainable Champions. Ansätze zur Analyse von Marktführern im Umweltbereich. Lüneburg: Centre for Sustainability Management e.V.

Schaltegger, S.; Hahn, T. & Burritt, R.L. (2001): EMA – Links. Government, Management and Stakeholders (UN-Workbook 2). Lüneburg: Centre for Sustainability Management e.V.

Schaltegger, S. & Petersen, H. (2001): Ecopreneurship – Konzept und Typologie. Lüneburg: Centre for Sustainability Management e.V.

Schaltegger, S. & Synnestvedt, T. (2001): The Forgotten Link Between „Green" and Economic Success. Environmental Management as the Crucial Trigger between Environmental and Economic Performance. Lüneburg: Centre for Sustainability Management e.V.

Wagner, M. (2001): A review of empirical studies concerning the relationship between environmental and economic performance. What does the evidence tell us? 2nd, revised edition. Lüneburg: Centre for Sustainability Management e.V.

## 2000

Figge, F. & Schaltegger, S. (2000): Was ist „Stakeholder Value"? Vom Schlagwort zur Messung. Lüneburg: Centre for Sustainability Management e.V. und Bank Pictet in Zusammenarbeit mit UNEP.

Figge, F. & Schaltegger, S. (2000): What is "Stakeholder Value"? Developing a catchphrase into a benchmarking tool. Lüneburg: Centre for Sustainability Management e.V. and Bank Pictet in association with UNEP.

Figge, F. & Schaltegger, S. (2000): Qu'est-ce que la «Stakeholder Value»? Du mot-clé à sa quantification. Lüneburg: Centre for Sustainability Management e.V. et Banque Pictet en association avec UNEP.

Schaltegger, S.; Hahn, T. & Burritt, R.L. (2000): Environmental Management Accounting – Overview and Main Approaches. Lüneburg: Centre for Sustainability Management e.V.