



# Newsletter

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## Measuring and Communicating Corporate Sustainability

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The Centre for Sustainability Management (CSM) is an international competence centre for Sustainability Management at the Leuphana University of Lüneburg, Germany. It is headed by Prof. Dr Stefan Schaltegger and Assistant Professor Dr Markus Beckmann and currently employs 30 researchers trained in environmental sciences, business management and economics.

CSM conducts theoretical, transdisciplinary and practice-oriented research projects. It offers the first world wide distance learning MBA in Sustainability Management and is involved in several national and international education programmes. Furthermore, CSM organises knowledge and know-how transfer in corporate sustainability management.

The research projects of CSM deal with: 'Fundamentals of Corporate Sustainability Management', 'Measurement, Information, Accounting and Communication', 'Management of Stakeholder Relations', 'Integrative Sustainability Management' and 'Social Entrepreneurship'.

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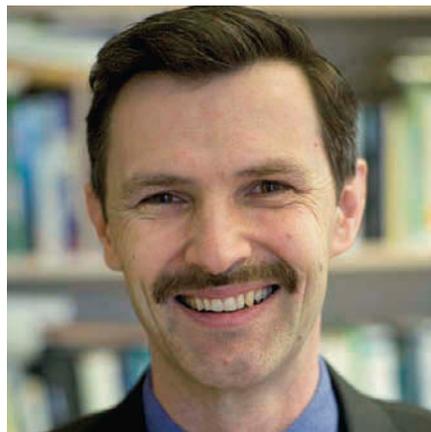
## Measuring and Communicating Corporate Sustainability

Sustainability has developed from a vague idea to a concept and reality for numerous companies. Projects and measures to act in a socially and environmentally friendly manner have been documented and are on the increase. Yet, the success of sustainability efforts also depends on what information managers receive as well as the way sustainability information is communicated to stakeholders – both internal and external. In this context the Centre for Sustainability Management conducts research on all aspects of data collection, indicator development, the adaptation of central information systems such as accounting and sustainability reporting, or the development of new tools such as sustainability management control.

A most recent example of the importance of sustainability information and its communication is the oil spill in the Gulf of Mexico. The accident, BP's communication and the struggle to solve the problem resulted in a rapid drop in share price, halving BP's value within six weeks' time, thereby endangering the existence of one of the largest companies in the world and causing irreversible damage to ecosystems. On the one hand, investigations revealed that information on the risk and its potential was available but not communicated timely. During a hearing in the US Congress Tony Hayward, CEO of BP at that time, claimed that he was not involved in decision making. In other words: as CEO he was not informed about economically most relevant sustainability issues. On the other hand the communication of the problem and its details raised criticism, as the oil company tried to conceal the true dimension of the catastrophe. This act raised additional attention to the event and is likely to lead to more severe consequences for the responsible. This recent example is just one of many illustrating the growing need for better sustainability information management systems.

As the results of our Corporate Sustainability Barometer project (pages 4 & 5) point out, departments in charge of information systems development do not feel particularly addressed by sustainability issues. This should by no means suggest that these functions have little to do

with corporate sustainability but rather that they are not fully aware of what they could and should contribute. This is also reflected by the fact that the majority of management courses and accounting curricula in particular do not address sustainability in the education of future accountants.



At the same time numerous companies are successful in managing corporate sustainability. The number of such companies has grown and they themselves as well as third-party institutions report advances in the field. Given the negligible involvement of the accounting profession in corporate sustainability practice, the efficacy and efficiency of their activities slow down potentials improvement. And have sustainability pioneers already engaged their accounting professionals?

A recent research conducted by the

Centre of Sustainability Management together with the Business school at Gloucestershire University in the UK (pages 6 & 7) reveals that sustainability pioneers have started exploring the potentials and making use of sustainability accounting.

The importance of information in the context of sustainability is also presented on pages 8 and 9. By looking into the information required by decision makers in financing renewable energy projects, the business case can be strengthened.

My experience shows that an effective approach to managing and communicating sustainability information is essential for the success of corporate sustainability management. Information should not only be used to approach existing challenges – it is also essential for uncovering the complex linkages between innumerable sustainability aspects – and thus innovation.

Measurement and communication of sustainability information is a key research area of the CSM. We hope that this newsletter gives you some insights into contemporary challenges and our research.

*Prof. Dr Stefan Schaltegger*

# ‘Corporate Sustainability Barometer’ – How do Companies in Germany Implement Sustainability Management?

A growing number of companies address sustainability issues. Yet, the practice of corporate sustainability management has not been systematically researched to date. Hence, the objective of the project ‘Corporate Sustainability Barometer’ is to capture the state and the progress of sustainability management in research and practice. The final report was prepared by the Centre for Sustainability Management (CSM) in cooperation with PricewaterhouseCoopers (PwC).

## Bridging theory and practice

The ‘Corporate Sustainability Barometer’ serves to track the development of corporate sustainability practice. In addition it investigates research in the field, thereby bridging the gap between management science and practice. To fulfil this objective, the first part of the study delivers a literature analysis in scientific journals whereas the second part discusses the results of a scientifically well-founded survey. Repeatedly collecting primary, current data allows comparing corporate sustainability management practice over time. Additionally, the survey aims at covering a broad range of topics across all industries. Furthermore, including respondents’ opinions and expectations allows depicting a well-founded image of sustainability in corporate practice. A similar approach has been deployed by political and economic barometers such as the German-based Ifo Business Climate Index and the ZDF-Politbarometer.

## Sustainability research of growing importance

Sustainability management has developed as a specialist discipline. This is demonstrated by the increasing number of scientific journals with focus on sustainability management. The major functional areas these journals deal with are production, marketing, accounting and management control. Furthermore, sustainability management has established in mainstream business research, which is rendered visible by the number of scientific articles in general management journals.

Driven by the insufficient documentation of the state of practice, however,

the CSM collaborated with PwC on a project that captures a snapshot of the state of the art of sustainability management and CSR in corporate practice throughout Germany. The project also takes a recursive approach to capture the state of such activities on a regular basis and thus allows a benchmark over a period of time, thus capturing the progress of corporate sustainability management practice.

## An empirical approach

A survey was conducted among 300 large companies in Germany by means of a questionnaire in winter 2009/2010. A total of 112 companies returned usable data. The sample comprises various sectors and company sizes in regard to both turnover and number of employees.

Companies were surveyed in regard to (1) initiation and the motivation behind as well as the direction of their sustainability management, (2) the integration, (3) and implementation of sustainability as well as (4) the special focus on sustainability management in times of financial crisis.

## Results

A selection of the results is presented in the following section.

❶ **Initiation and motivation:** Reasons for corporate sustainability are a combination of societal expectations (push factors) and market demand (pull factors). Public awareness, media, legal regulation, NGOs, competitors, and consumers are categorised as encouraging the implementation of corporate sustainability, whereas suppliers, retailers, insurance companies, unions, and banks are

rarely mentioned in this context (figure 1). Comparing these results with previous surveys suggests that ‘pull’ factors are gaining relevance, implying that sustainability management can increasingly be associated with market opportunities.

- ❷ **Integration:** Not all organisational units and company actors are involved in sustainability management. Beside sustainability/CSR and EHS units, general management and corporate communications play a major role in fostering sustainability, whereas accounting, management control, and finance are rarely involved. Yet, sustainability-oriented organisational development requires involving all units, especially those providing management information upon which top management decisions are based.
- ❸ **Implementation:** The most widespread methods of sustainability management were reported to be quality and environmental management systems, employee suggestion systems, environmental audits, and risk analysis. Social and integrative methods still have a much more limited application in practice as opposed to environmental ones. Barely applied are among others sustainability accounting methods. Less than half of the companies measure the effects of environmental or social activities on corporate success. Therefore, although approaches to create Business Cases for Sustainability exist, the achievement of such objectives can rarely be measured.
- ❹ **Special focus – Sustainability in times of financial crisis:** Despite the financial and economic crisis of 2008 the

sustainability engagement has not decreased in most of the companies and has even increased in several cases. Overall, the recent crisis does not seem to have affected corporate sustainability activities negatively. Many of the respondents recognise the need to act sustainably as well as the potential that this engagement may contribute to the company's competitiveness. In turn, a majority of the respondents perceive the crisis as an opportunity for corporate sustainability.

**Future outlook**

The results of the 'Corporate Sustainability Barometer' reveal that companies are seriously engaged in implementing sustainability management. Yet, several challenges on the road to corporate sus-

tainability need to be tackled. Examples include achieving a stronger market-orientation and involving all departments – especially accounting and management control – were underscored.

Juxtaposing sustainability management in theory and in practice reveals that scientific journals with focus on sustainability management mainly focus on production, marketing, accounting, and management control, although in corporate practice these are not the organisational units that are most fond of sustainability. This reveals a severe gap between theory and practice which has to be overcome in order to ensure improving sustainable development of – and contributed by – business.

*Sarah Elena Windolph and Dorli Harms*

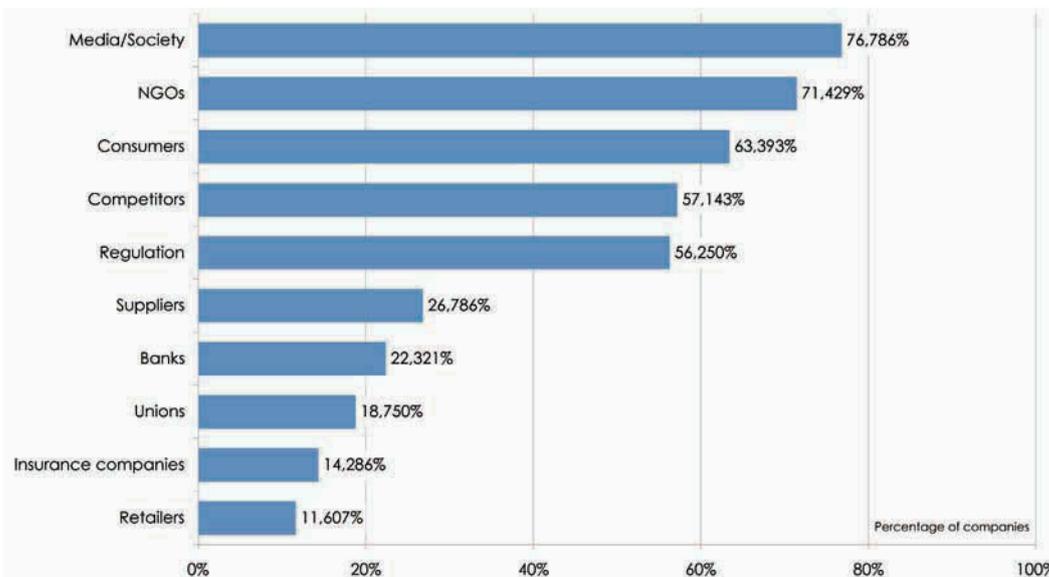


Figure1: Stakeholders encouraging corporate sustainability management



**Project:** Corporate Sustainability Barometer

**Funding project partner:** PricewaterhouseCoopers AG WPG

**Project duration:** 04/2009 through 08/2010

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# Accounting Information and the Accounting Function in Corporate Sustainability Management

Successful sustainability management requires informed management decisions, which in turn require a robust information basis provided by adequate information systems. Companies are thus challenged to rethink their information needs and systems so that information is available in sufficient detail and quality to successfully manage sustainability performance. To what extent this is happening and what best practices exist has been scarcely explored to date. Therefore, the Centre for Sustainability Management has conducted an explorative empirical research project to throw light on the current practice of sustainability management accounting.

## Integrating non-financial performance

Sustainability efforts of companies have developed rapidly during the recent decade. Not only has an increasing number of companies applying sustainability measures been reported but also the spectrum of challenges tackled by these companies has been increasing steadily. With the growing body of literature on sustainability practices, companies have a number of tools at their disposition as opposed to two decades ago, when the concept of sustainability had just found its way into scientific literature. As a result, it is no longer sufficient for companies to implement various sustainability projects and activities, but it has become necessary to focus on efficient, integrated measures and activities. Furthermore, as sustainability-related projects develop, their performance has to be monitored and evaluated, which needs to be based on reliable information as opposed to instincts, impressions or randomly chosen proxy indicators.

Thus, reliable and relevant information is needed to base such decisions on. Little is known, however, as to whether extra-financial information is subject to a centralised information management, thereby taking advantage of established accounting procedures and systems or whether it is managed on an ad hoc basis.

Corporate practice suggests that the accounting system presents the most important information resource for decision makers for a number of reasons. For example, information collected by management accounting systems is expected to be reliable due to the standardised

mechanisms in the processes of data collection and verification as well as the fact that it is subject to regular internal and external audit. Thus, the accountant's involvement in sustainability management could help to improve the efficacy and efficiency of corporate sustainability management.

## State of practice under-researched

There have been numerous scientific publications on corporate environmental and sustainability accounting and the possible benefits it could create. Yet, only limited empirical evidence exists as to whether sustainability accounting is actually deployed by companies, and what it looks like in practice. Expecting to find the answers to these questions and thereby open the arena for subsequent research, a project with companies in two leading countries in the field of sustainability accounting – Germany and the UK – was conducted.

Together with Martin Bennett of the University of Gloucestershire Business School and supported by the Institute of Chartered Accountants in England and Wales (ICAEW), the Centre for Sustainability Management investigated the current sustainability accounting practice among pioneers in the field.

## Involving sustainability experts

Since the research on sustainability accounting practices has been rather scarce, an explorative approach was necessary.

Among the main research questions were what sustainability information is collected, by whom it is collected, to

whom it is provided, by what means and what it is used for. To carry out this challenging analysis, large multinationals in both Germany and the UK were chosen. The companies needed not be of comparable sectors but they had to be able to demonstrate sound sustainability performance (e.g. by means of a recognised sustainability report) or other positive sustainability-related publicity.

## Increasing involvement of the accounting function

Among the main findings of the research project are:

- ❶ The importance of sustainability accounting is steadily increasing and its importance is recognised by sustainability pioneers. As a result, the number of people involved in producing, managing and using such information increases, resulting in various challenges to managing information flows.
- ❷ Inefficiencies in information management exist. Several reasons for this could be identified. On the one hand sustainability management is still carried out in a relatively isolated manner, despite its interdisciplinary nature. This results from the fact that sustainability-related information is often managed separately from conventional accounting information, thus inflicting high costs for identifying, collecting, managing and using such information.
- ❸ The role of the accountant in sustainability management is on the increase. Although the role of the accountant has merely been addressed empirically

rically to date, the large body of accounting research suggests that the management accountant is only insufficiently involved in environmental and sustainability management. Related literature is a few years old, during which period sustainability management has witnessed increasing efforts. Therefore a certain level of involvement of the accountant was expected, however, even more, a higher than anticipated involvement was observed. This involvement was identified throughout the typical functions of the accounting position – from information identification through analysis and interpretation to communication.

- ④ Carbon accounting was observed uniformly throughout the researched sample. This can be explained with carbon’s tangible and direct financial relevance. Yet, the results reveal that companies not only aim to minimise carbon-related costs but also seek to seize related opportunities.

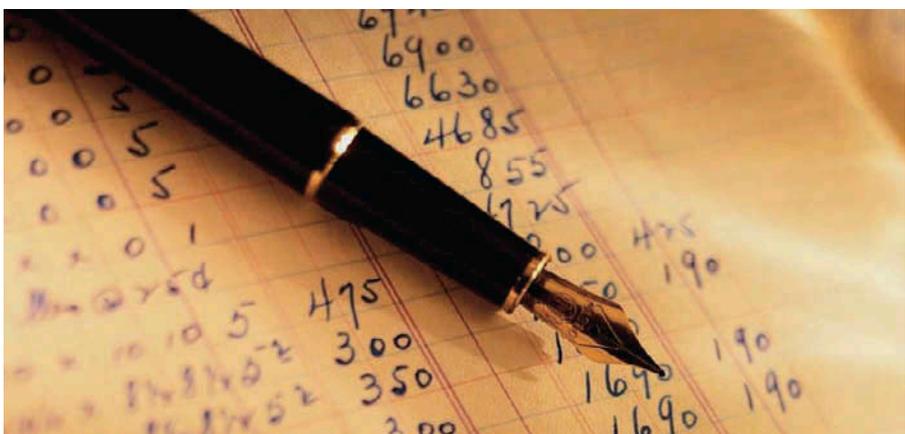
**Conclusions**

The research reveals several important aspects. On the one hand practitioners involved in sustainability management are convinced that corporate sustainability would benefit from involving accounting practices and experts even more into sustainability information management.

On the other hand the project outlines the essential need to train accounting professionals how to consider and approach sustainability issues, so that a basic understanding and hence initiative to approach sustainability accounting issues is developed and established.

The findings of this project represent a snapshot of corporate accounting practice. Given the fast pace at which corporate sustainability activities develop in terms of both scope and depth, further research is needed in order to safeguard the success of corporate sustainability management activities.

*Dimitar Zvezdov*



**Project:** Accounting Information and the Accounting Function in Sustainability Management

**Project partner:** University of Gloucestershire Business School (UGBS)

**Funding:** Institute of Chartered Accountants in England and Wales (ICAEW)

**Project duration:** 10/2008 through 6/2010

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## What Types of Photovoltaic Projects do Debt Investors Prefer to Finance?

Financing renewable energy projects requires significant shares of debt capital, with debt ratios of up to 80% being common. Following the recent credit crunch, financial markets experienced a shortage of debt capital, giving rise to concern about growth expectations for renewables. With a focus on photovoltaic projects and debt investors financing decisions, the Centre for Sustainability Management and the Good Energies Chair, University of St. Gallen, conducted an Adaptive Choice-Based Conjoint experiment with German financing experts to find out the information investors look for.

Photovoltaic (PV) is one of the renewable energy sources with potential to contribute to satisfying the increasing energy demand. Whereas small-scale solutions exist and have been used for over a decade now, large projects provide more potential for building up capacities. In order to stimulate installing such modules, the German government has provided attractive incentives for PV-produced electricity; thus, numerous organisations have been founded to set up and operate PV facilities.

Yet, due to the often large investments required, such projects depend on the availability of finance. In order to investigate critical factors for decision makers in financing PV projects, the CSM and the Good Energies Chair at the University of St. Gallen conducted a research project to identify and assess critical information in the decision making process of PV project financing.

### How to get a PV-project financed

Two central aspects have to be considered when developing photovoltaic projects. On the one hand renewable ener-

gies strongly depend on political incentives. On the other hand, the credit crunch influenced the conditions for renewable energy financing. As a consequence, the market for PV projects has undergone consolidation. Credit granting is an important factor for project development. Literature provides very little information on how debt capital providers evaluate applications for PV project loans – information that could help to handle uncertainties and risks for PV project developers. Loan commitments depend on how lenders evaluate project designs from a risk and profitability perspective. Therefore, the research project addressed the question: What types of PV projects do lenders prefer to finance and which project characteristics are essential for a successful loan application?

### Expert opinion wanted

To answer the research question, an Adaptive Choice-Based Conjoint experiment was developed and conducted between January and March 2010, involving 43 German-based experts in renewable energy project finance. The experiment

focused on fictitious medium- and large-scale ground-mounted PV installations subject to the German Renewable Energy Sources Act. Although conjoint experiments are widely used in marketing research and for exploring investment behaviour, scholars in renewable energy investment have only just started applying this method. To date, this survey is the first exploration of lenders' preferences for PV projects using conjoint analysis. Therefore, a major challenge was the development of an operable set of attributes to describe PV projects in the choice experiment. The X-axis of Figure 1 summarises the attributes explored.

### What counts and what does not

By focusing on the values of different attributes, a detailed insight into lender preferences was gained (Figure 1). Positive values indicate positive utilities and thus a positive impact on choices. Overall, lenders favour premium brands. Additionally, they tend to highly appreciate an encompassing maintenance concept with system inspection and system monitoring. Moreover, decision makers opt



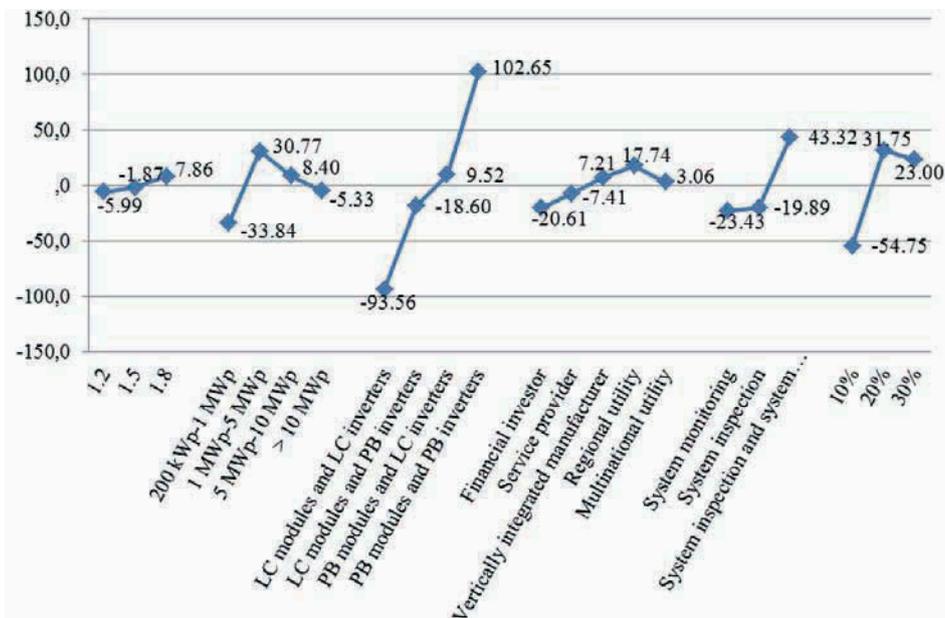


Figure 1: Preferences in financing PV projects

for regional and multinational utilities as project initiators for PV projects. Regarding capacity, project sizes of 1 MWp-5 MWp appear to be most attractive, followed by projects with a 5-10 MWp capacity. Last but not least, an inverted U-curve relationship for the optimal equity ratio peaking at 20% can be observed.

**Debt for brands**

The analysis reveals a preference in financing decisions which we call ‘debt for brands’. Simulations based on the empirically derived results reveal that lenders prefer PV projects with premium brand technology rather than low-cost technology. Although it was assumed that lenders would always favour project proposals with the highest Debt Service

Cover Ratios, our study reveals that they also choose (less attractive) proposals with comparably lower Debt Service Cover Ratios as long as these projects include premium brand solar modules and/or premium brand inverters. Finally, lenders choose comparably inferior projects, even with comparably higher risk, as long as such projects are developed with premium brand modules and/or premium brand inverters. In conclusion future research should focus on the impact of different brands and take a closer look at the interrelations between economic facts and attributes such as module manufacturer or the track record of the project developer.

*Florian Lüdeke-Freund*



**Project:** PV Project Financing – Empirical Evidence from Choice Experiments with Debt Investors

**Project partners:** Good Energies Chair for Management of Renewable Energies

**Funding:** Research funds of the Leuphana University of Lüneburg and St. Gallen University (Switzerland)

**Project duration:** 08/2009 through 06/2010

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# The Internationalisation of Material Flow Cost Accounting

The number of standards and new proposals for standards within the ISO 14000 family for environmental management is growing. Several new ideas and proposals like the standardisation of product carbon footprint calculation and communication have received a considerable amount of attention while others have remained rather unnoticed by the public. An example of the latter is the proposed ISO 14051 standard on Material Flow Cost Accounting, scheduled for release in 2011. Two CSM research fellows are members of the national and international expert working groups on MFCA hosted by the German Institute for Standardisation (DIN) and the International Standardisation Organisation (ISO) respectively.

Sustainability and environmental management standards provide the foundation for the development of specific standards and related products under the sub-categories of greenhouse gas management, energy management and resource efficiency, renewable/alternative energy sources, social responsibility, etc. Key example of current standardisation activities in the area of sustainability and environmental management is the ISO 14000 series.

## What is Material Flow Cost Accounting?

Material Flow Cost Accounting (MFCA) is a comparably well-established tool of environmental management accounting dating back to the early 1990s. It was initially developed in Germany

and Switzerland and focuses on tracing waste, emissions as well as by-products, and can help boost corporate economic and environmental performance. MFCA has become a widely used methodology and is known under different names such as resource efficiency accounting, flow cost accounting or material-flow oriented activity-based costing. In 2007 Japan's Ministry of Economy, Trade and Industry (METI) took the initiative to standardise MFCA internationally.

Monetary quantification and visualisation of material losses is the overall objective of MFCA. The approach aims at reducing waste-induced inefficiencies in decision making. The crucial difference to conventional cost accounting is that material-related processes are first allocated to products, but then also allocated

to product-related waste based on physical activity. MFCA implies a linear relationship between inputs and outputs: a reduction of product-related waste leads to a reduction of input flows. A simple exemplification is illustrated in Figure 1. All process-related costs are assigned to product and material losses according to the 80:20 ratio. Knowing that the value associated with wasted material is EUR 400 or EUR 20 per kg of waste provides strong incentives for efficiency improvements and a basis for the appraisal of efficiency-related investments.

## A standard needed?

At first glance MFCA seems to be a rather straight-forward approach for internal decision makers. This raises the question why such a tool needs standardisation, in particular as not even a certification of the ISO 14051 application is intended (i.e. other than in the internally focused ISO 14001 on environmental management systems). Thus, the main reasoning for the standardisation of MFCA is the achievement of a common international understanding of the approach as well as its promotion. Indeed, the standardisation process has helped to reveal some rather intricate questions of MFCA and to reach international agreement on how to handle these.

## Several considerations

As a result of the lack of a uniform MFCA standard, it has been revealed that a sound physical input-output model of a company, production line, etc. is needed. Such models include not only main product input materials, products, and wastes, but also auxiliaries, emission, etc.

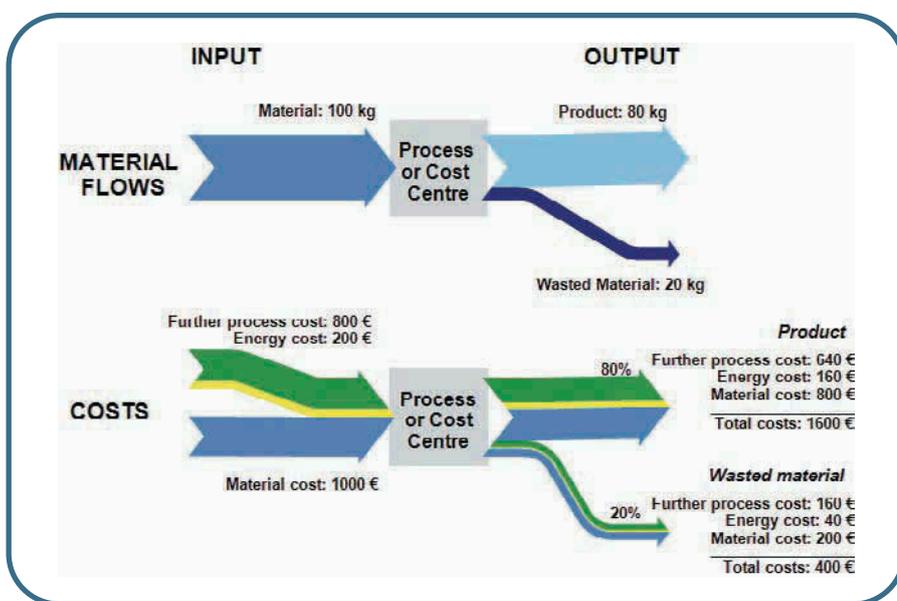


Figure 1: Accounting for material flow cost: graphic depiction

If all material outputs including those that were never intended to become part of a final product are considered in defining the distribution ratio of product to wasted material, a too high percentage of costs is assigned to wasted material.

Another example of questions that require uniform understanding of MFCA issues arises due to the fact that internal recycling has been disregarded in many MFCA applications. Internal recycling does not generate wasted materials as such, but it indicates inefficiencies within the system under examination. Therefore, MFCA needs to analyse all additional costs caused by internal recycling, such as the costs of recycling processes and also the increased energy and labour demand caused by recycled material. To put it another way, MFCA analysis requi-

res the comparison of the status quo with an ideal scenario of product efficiency (no waste generated). The difference reveals the saving potential of zero inefficiency.

**A basic component of environmental management accounting**

MFCA is not a new, stand-alone approach to cost accounting. It complements various cost accounting approaches by providing figures on the costs of inefficiencies imbedded in a process, product, production line or even a whole company. MFCA is one tool of Environmental Management Accounting, a concept the Centre for Sustainability Management has promoted and facilitated actively for over a decade, e.g. through the Environmental and Sustainability

Management Accounting Network (EMAN) in Europe, Asia-Pacific, Africa and America. The proposed ISO standard 14051 helps to harmonise and disseminate MFCA on an international scale and thus contributes to the continuous improvement and wider distribution of Environmental Management Accounting.

*Tobias Viere and  
Martina Prox*



**ISO 14051: Current status of standardisation**

Although the original concept of MFCA was developed in Germany, in 2008 the Japanese Industrial Standards Committee (JISC) submitted an MFCA proposal to ISO/TC 207, resulting in the creation of a new working group, WG 8, in March 2008, to develop ISO 14051.

ISO/TC 207/WG 8 is currently progressing from working draft to committee draft stage in the development of ISO 14051, Environmental management – Material flow cost accounting – General framework. The International Standard is aimed to comprise the following:

1. Scope
2. Normative reference
3. Terms and Definitions
4. Objectives of MFCA
5. Framework and Elements of MFCA
6. Approach for MFCA

**Annex: Calculation Methods and Case Studies**

While the objective of ISO 14051 is to standardise the general principles and framework of MFCA, it does not cover detailed procedures for accounting calculation but rather the steps required to introduce MFCA, and as such is expected to benefit a wide range of industries.

ISO 14051 can be considered as a standard for sustainable development. However, implementation of the cost accounting method is not within its scope at this stage, nor is it intended for the purpose of third-party certification. Furthermore, MFCA can be integrated into the ISO 14000 family of EMS standards and is complementary to life cycle assessment (LCA), environmental performance evaluation (EPE) and greenhouse gas management standards.

**Further information:**

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Martina Prox is a research fellow of the CSM and ifu Hamburg GmbH delegate at various DIN and ISO committees and working groups including MFCA.

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## Material Efficiency and Resource Conservation – the ‘Carrot Approach’

It is often taken for granted that (particularly producing) companies will be constantly striving to improve their material efficiency in order to remain competitive in a global market. Yet, research reveals that efficiency potentials are not tackled accordingly. Finding out why inefficiencies exist is essential for developing a suitable set of tools for exploiting these potentials, thereby resulting in a win-win situation for economy and environment.

### The need to act today

Environmental degradation caused by the extraction and exploitation of natural resources, the associated emissions as well as the disposal of waste, are environmental problems which often have negative social and economic consequences. On the other hand, factors such as the economic and political insecurity of raw material supplies can also lead to strong economic and social dislocation in countries that depend on these resources. These factors spread beyond corporate competitiveness to economic competitive disadvantages arising from the inefficient use of resources and jeopardise the sustainable development of businesses. Thus, a resource efficiency discussion is gathering momentum in national and international politics.

### Material efficiency and resource conservation project framework

Against this background, the German Environment Ministry and the Federal Environment Agency set up the research project ‘Material Efficiency and Resource Conservation’, coordinated by the Wuppertal Institute for Climate, Environment and Energy, and featuring 31 project partners from various research institutes, companies, universities and consulting services.

The project comprises 14 work packages in four areas: ‘Potentials of Increasing Resource Efficiency’, ‘Target Group Specific Policy of Resource Efficiency’, ‘Analysis of Effects’, ‘Application, Agenda-Setting, Dissemination of Results’. The work package ‘Resource Policy at the Microscopic Level’ focuses on tools and methods that aim to provide incentives for higher resource efficiency operation both in companies and along the value creation chain. The range of tools analysed includes improved distribution of output for companies and company networks, diffusion in the area of cross-sectional technology, market launch programmes for resource-saving lead products, information campaigns and export promotion programmes.

### Involving companies

The Centre for Sustainability Management was engaged in exploring corporate practice in regard to material efficiency, whereas the University of Applied Sciences, Pforzheim conducted interviews with intermediaries such as financial institutes, consulting companies and representatives of trade chambers.

A large number of companies were approached so that a selection of such companies could be achieved, that have specific or explicit experience with questions of resource efficiency.

The interviews aimed to explore the usability of previously identified ‘tools’ for encouraging resource efficiency in companies. The closely analysed tools were clustered in three groups:

### Throwing light on linkages

The interviews aimed to explore the usability of previously identified ‘tools’ for encouraging resource efficiency in companies. The closely analysed tools were clustered in three groups:

- Public efficiency awareness & performance
- Innovation-related and market-oriented tools
- Financial tools

An example of the first set of tools are further training and qualification programmes with focus on resource efficiency. The second set of tools included think tanks and business angels as a potential key actor in approaching the challenge. Closely investigated were also financial tools such as resource use focused reporting.

In order to gain an unbiased understanding of these tools on business and related actors, the interviews focused on capturing the experience of managers in regard to these. Particular attention was paid to weaknesses of currently deployed tools in order to develop solutions that overcome them in future. Diverse examples of such weaknesses of current approaches to increasing resource efficiency were captured. For instance, material efficiency related trainings focus too narrowly on technical solutions, although a managerial approach might be in a posi-

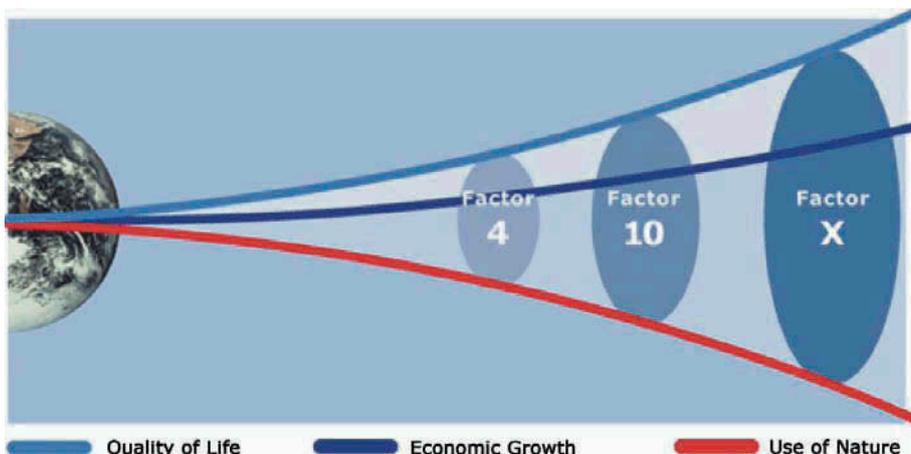


Figure 1: Meeting the needs of the present without compromising the ability of future generations to meet their own needs requires significant efficiency improvement

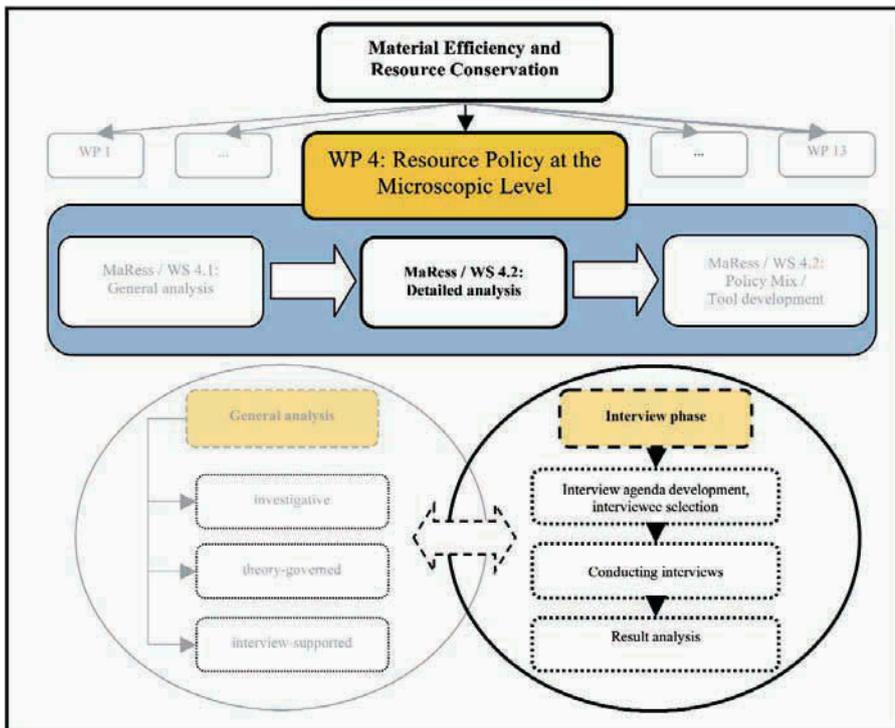


Figure 2: A general overview of the project and the role of the Centre for Sustainability Management in it

tion to contribute more to improving efficiency. Furthermore, the research identified that such trainings focus too strongly on monetary issues, thereby neglecting topics with high potential but little economic importance. For example water-saving projects might have very high environmental impact and thus saving potential, but due to the comparably low prices of water, projects are not of high priority, since available resources can be invested in projects with e.g. higher return on investment.

**Overcoming inefficiencies**

The results of this exploratory study reveals that despite the logical pursuit of higher material efficiency, small, medium and large companies are not necessarily utilising the available resources to increase their efficiency, although this would directly result in improving their economic performance.

On the one hand the incentives for companies to tackle the issue seem limited, despite the expected added value such as better financing conditions, lower insurance premium or improved publicity. Such benefits are yet to be observed.

In a subsequent step, the results are used for developing a set of tools and measures that overcome the reasons for the observed inefficiencies. Among the main implications of the research findings is the urgent need to develop, implement and communicate a framework within which companies recognise the added value of their efforts towards increased efficiency. As the results outline, efficient promotion of resource efficiency can be facilitated by a strong collaboration between businesses, intermediaries and government.

*Dimitar Zvezdov*



**Project:** Material Efficiency and Resource Conservation

**Project partners:** 31 partners from various research institutes, companies, universities and consulting services

**Funding:** Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; Federal Environment Agency

**Project duration:** 10/2008 through 3/2011

**Researchers:** Dimitar Zvezdov and Professor Stefan Schaltegger

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**Publication:**  
■ Görlach, S. & Zvezdov, D. (2010): Stimmen aus der Praxis: Ergebnisse aus der begleitenden Befragung von Intermediären und Unternehmen zum Thema Ressourceneffizienz. Wuppertal: WI.  
■ Görlach, S. & Zvezdov, D. (2010): Ressourceneffizienz in der Praxis: Zur Anreizsituation aus Sicht von Unternehmen und Intermediären, Umweltwirtschaftsforum (UWF).

## Eco-Efficient Approach of Dehydrating Agricultural Biomass

Energy and environmental policies aim at increasing the amount of biomass used for energy generation. One less explored approach is the use of moist agricultural biomass such as grass, silage or by-products from rural activities. Based on the current situation that transportation and storage of moist biomass is inefficient, the Centre for Sustainability Management conducted interdisciplinary research aiming at developing a business approach incorporating technical and economic perspectives of utilising moist biomass.

Renewable energy sources are essential for sustainable development and satisfying growing energy demand. Biomass is one promising energy source, yet various challenges exist. One of these challenges is the limited applicability of moist biomass, since its energy content and thus the efficiency of its use is very low.

### The challenge

An interdisciplinary research team of engineers, chemists, economists and agricultural experts, developed an innovative technical process and a concept for economically dehydrating agricultural biomass. The result is an eco-efficient technology, based on a screw-extruder, which reduces the water content of biomass by means of mechanical pressure. To optimise technical components and economical characteristics, the screw-extruder was designed for processing grass and grass silage. Other raw materials such as maize or wood chips were also tested and can be used too.

### Competitive products

Two products result from this process: dehydrated solid matter and a fluid. In the case of grass silage, the water content of the solid matter is reduced from about 75% to less than 40%. The solid matter can be used as a combustible, or

as a physical raw material. Cost comparisons show that it competes with wood chips and straw.

Silage price and throughput are most crucial to the cost structure; thus, low purchase prices and high volumes per hour substantially leverage the economic success of the developed approach.

### Further applications

Additionally, the fluid by-product was tested as input for biogas production. Chemical analyses demonstrate that it has advantageous characteristics compared to e.g. slurry. It has to be noted though that because of its low energy density, transport distances need to be minimised. So far, there is no market for the separated fluid, yet new markets opportunities such as developing organic fertiliser, are currently evaluated.

It can be assumed that the developed dehydration process can stimulate new regional biomass markets for presently unattractive resources i.e. unusable waste. Furthermore, new markets, value chains and business models can be designed in accordance with the characteristics of the developed energy and cost efficient extrusion process.

*Florian Lüdeke-Freund*



**Project:** Development of an Advanced Process for the Dehydration and Pelletisation of Agricultural Biomass

**Project duration:** 02/2007 through 08/2009

**Funding:** Deutsche Bundesstiftung Umwelt (DBU)

**Project partners:** Rehart GmbH, Pellet Power GbR and Dr Jan Müller

**Researchers:** Florian Lüdeke-Freund and Professor Stefan Schaltegger

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**Publication:**  
■ Lüdeke-Freund, F., Müller, J. & Schaltegger, S. (2010): Entwicklung eines praxisreifen Verfahrens zur Entwässerung von stark wasserhaltigen Biomassen aus der Landwirtschaft. Lüneburg: CSM.

## Corporate biodiversity management

Corporate activities have a major influence on the natural environment and particularly on biodiversity. Since biodiversity and ecosystem services are not subject to regulated access, corporate activities often lead to their overexploitation and to a loss of global biodiversity.

hardly known although dealing with the challenge of preserving biodiversity offers manifold potentials for improving corporate performance.

A milestone of the ‘Biodiversity in Good Company Initiative’ – launched by the German Federal Ministry for Environ-

ment, Nature Conservation and Nuclear Safety and commissioned by the German Society for Technical Cooperation (GTZ) – is a handbook produced by the Centre for Sustainability Management. The handbook illustrates linkages between biodiversity conservation and sustainable business development.

Central to the developed management approach are the identification of several fields of action and the discussion on when

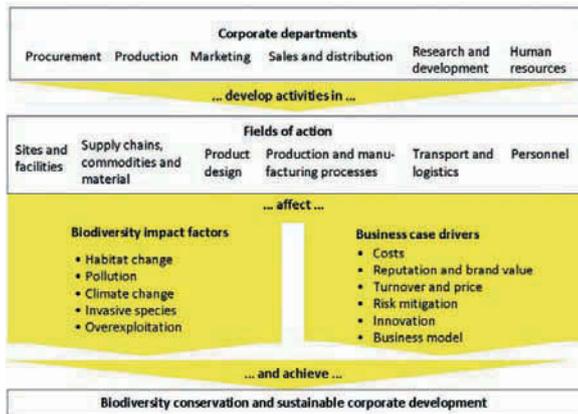


Figure 1: Corporate biodiversity management, fields of action for corporate departments

Currently most biodiversity conservation approaches take either a legal, planning, financial or political perspective to regulate the access to and handling of biodiversity resources. Until recently this topic had been largely ignored by business. Hence, the opportunities for sustainable business development arising from corporate biodiversity management are only

these can be deployed by various corporate departments (Figure 1). By engaging in corporate biodiversity management, it is possible to influence the main impact factors on biodiversity and business case drivers at the same time.

Uwe Beständig

## Biodiversity and Corporate Activities

‘Biodiversity and Corporate Activities’ is a research project launched in December 2009 by the CSM, the Global Nature Fund and the German Environmental Management Association (B.A.U.M. e.V.). The project is funded by the Federal Nature Conservation Agency (BfN) and aims to promote awareness of the interdependency between corporate activities and biodiversity.

Target audience of this project are CSR managers as well as actors in departments with a high impact on biodiversity such as procurement, marketing or site manage-

ment. In order to support these internal stakeholders, several dialog fora are being organised and several department-specific dossiers compiled. The CSM, its project partners and interested companies thus develop concepts and instruments that trigger and support various corporate biodiversity related processes.

The project also aims at supporting political decision makers in improving the general conditions for integrating biodiversity challenges in corporate processes.

Uwe Beständig



**Project:** Corporate Biodiversity Management

**Project duration:** 03/2009 through 03/2010

**Researchers:** Professor Stefan Schaltegger & Uwe Beständig

**Project partners:** GTZ, B.A.U.M. e.V.

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**Publication:**  
■ Schaltegger, S. & Beständig, U. (2010): Corporate Biodiversity Management Handbook. A Guide for Practical Implementation, Berlin/Eschborn/ Lüneburg: BMU (Ed.)/GTZ/CSM-Leuphana University.



**Project:** Corporate Biodiversity Management and Stakeholder Communication

**Project duration:** 12/2009 through 05/2012

**Project partners:** B.A.U.M. e.V., BfN, GNF

**Researchers:** Professor Stefan Schaltegger and Uwe Beständig

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## Germany's first national research network dedicated to social entrepreneurship

Mercator, one of Germany's largest private foundations, has initiated the first German research network 'Innovative Social Action – Social Entrepreneurship' dedicated to Social Entrepreneurship. The network brings together 25 German academics from four complementary projects, including a joint research project carried out at Jacobs University Bremen and Leuphana University Lüneburg.

### Challenges in researching social entrepreneurship

Social entrepreneurs are individual actors who bring about change in social systems by means of innovation. In order to gain understanding for these processes, it is essential to look at the individual strategies of social entrepreneurs in the context of the different institutional environments in which they operate. In fact, critically assessing the barriers and opportunities for social entrepreneurship in Germany requires examining the institutional ecologies of the German welfare state. Since the German welfare state is not a monolith, these institutional ecologies are likely to differ considerably; social entrepreneurs concerned with integration operate in a very different institutional environment than, e.g. social entrepreneurs in the densely institutionalized ecology of education. Thus, even in Germany, any study of social entrepreneurship needs to adopt a comparative case study approach to decipher the interplay between social entrepreneurs and their institutional environments.

### Taking a multidisciplinary perspective

The joint research project now carried out by Leuphana University and Jacobs University aims to investigate

these specific system-actor interdependencies from a multi-disciplinary perspective. Thus, the project explores the way social entrepreneurs create impact on German institutional networks and vice versa. The aim is to identify how different types of institutional networks impact social entrepreneurship and how different types of entrepreneurial strategies succeed in or fail at bringing about institutional evolution. On the basis of these findings, the project aims to formulate recommendations for policy makers, stakeholders and practitioners.

### Conducting the research

Together with Prof. Steven Ney from Jacobs University Bremen, Prof. Markus Beckmann, professor for Social Entrepreneurship at the CSM, is examining 'Social Entrepreneurs as Evolutionary Agents in the German Institutional Landscape'. At Leuphana University, Markus Beckmann is carrying out this research project with Dorit Graebnitz, who joined the Centre for Sustainability Management as a research assistant. Dorit graduated the Humboldt-University in Berlin. Before joining the CSM, she acquired ample research experience in various projects.

*Prof. Dr Marcus Beckmann*



**Project:** Social Entrepreneurs as Evolutionary Agents in the German Institutional Landscape

**Project duration:** 03/2010 through 03/2012

**Funding:** Mercator Foundation

**Project partners:** Jacobs University Bremen (JUB)

**Researchers:** Professor Marcus Beckmann, Professor Steven Ney (JUB) and Dorit Gräbnitz

**Contact:**  
Dorit Gräbnitz  
E-mail: [dorit.graebnitz@uni.leuphana.de](mailto:dorit.graebnitz@uni.leuphana.de)



### Professor Markus Beckmann received the Max Weber Award

We are proud to announce that Markus Beckmann, junior professor for Social Entrepreneurship at the CSM, was awarded the prestigious Max Weber Prize for outstanding research in the field of business ethics during the official award ceremony held in Berlin on 18 May 2010.



Professor Beckmann also received the Kantorovič award for research achievement granted by Martin Luther University of Halle-Wittenberg.

### New CSM staff



The CSM welcomes two new colleagues. Dr Erik Gunnar Hansen joined the CSM in June and will be supporting the coordination of research activities. Erik obtained his PhD

degree at the Munich Technical University and is also visiting Scholar at Cranfield University, UK.

Dorit Gräbnitz has joined the CSM and will be working on the Mercator-funded project led by Professor Markus Beckmann.

### The 6<sup>th</sup> Environmental Management Leadership Symposium

The 6<sup>th</sup> Environmental Management Leadership Symposium ‘the Profession: From Environmental to Sustainability Management’ took place at Leuphana University on 22 – 23 March 2010. The symposium was funded by the German Research Foundation (DFG) and organised and hosted by the Centre for Sustainability Management (CSM) and is part of a larger series of international symposia within the Environmental Management Leadership Initiative (EML) initiated by Rochester Institute of Technology (RIT New York). We were pleased to welcome over 60 researchers from leading institutes in the field of sustainability management.



Sixteen workshops took place moderated by academic scientists and business professionals in the field of environmental and sustainability management on their topic of expertise. The workshop objectives and findings were presented and discussed within the final plenary sessions of each day.

Further information is available on the CSM web site under: <http://www2.leuphana.de/csm>.

### Sustainability and SMEs

The CSM has initiated the transfer and innovation network ‘Sustainability and SMEs’. The project is realised within the business incubator at Leuphana University. The project is managed by Dr Holger Petersen of the CSM.

### Professor Ki-Hoon Lee now with Griffith University

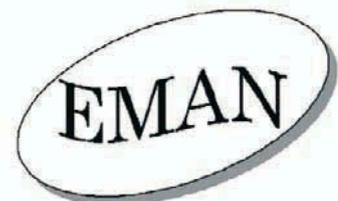


We would like to say goodbye to professor *Ki-Hoon Lee*. After 18 fruitful months (see publication section) as a guest professor at the CSM Ki-Hoon has taken the next

challenge and relocated to Griffith University, Brisbane, Australia. We thank Ki-Hoon and wish him all the best in Down Under.

### 13<sup>th</sup> EMAN Conference

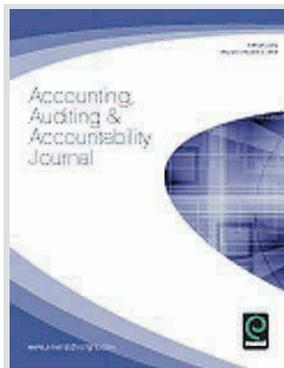
The 13<sup>th</sup> EMAN Conference on Environmental and Sustainability Management Accounting took place on 1 – 3 September 2010 in St. Andrews, Scotland. The conference featured presentations from both managerial and critical accounting schools as it was organised in collaboration with the 22<sup>nd</sup> CSEAR International



Congress on Social and Environmental Accounting Research. Over 100 researchers presented their work on the three days of presentation sessions and engaged in constructive discussions during plenary sessions. In a closing session, a debate between Professor Schaltegger and Professor Gray highlighted the importance of both schools of sustainability accounting.

### We have moved

The Centre for Sustainability Management has been relocated. We are now located in building eleven on the main campus, third and fourth floors.



Professor Roger Burritt of the University of South Australia, Adelaide and Professor Stefan Schaltegger, founder and director of the CSM have been invited as guest editors of a special issue of the **Accounting, Auditing & Accountability Journal**. The special issue on 'Sustainability Accounting, Auditing and Accountability. A Question for Management' has been recently published as Vol. 23, Issue 7.

## 2010

- Beckmann, M. (2010): Ordnungsverantwortung. Rational Choice als ordonomisches Forschungsprogramm. Berlin: Wissenschaftlicher Verlag Berlin.
- Burritt, R. & Schaltegger, S. (Guest editors) (2010): Sustainability Accounting. A Question for Management, Accounting, Accountability and Auditing Journal, Special Issue, Vol. 23, No. 7.
- Burritt, R.; Schaltegger, S. & Zvezdov, D. (2010): Carbon Management Accounting. Practice in Leading German Companies. Discussion paper, Adelaide/Lüneburg: CSM/CAGS.
- Dubielzig, F. (2010): Sozio-Controlling, in: Pantz, K. (Hrsg.): Summa cum laude. Wirtschaftswissenschaften. Darmstadt: Roter Fleck Verlag, 202-203.
- Engweiler, C. (2010): Nachhaltigkeitskommunikation mit strategischen KonsumentInnen, Lüneburg: Centre for Sustainability Management.
- Frey, R.; Schaltegger, S. & Gmünder, M. (2010): Räumliche Ökonomie. Theoretische Grundlagen, Basel/Lüneburg: CREMA/CSM.
- Hansen, E. G.; Gomm, M. L.; Bullinger, A. C. & Möslein, K. M. (2010): A community-based toolkit for designing ride-sharing services: The case of a virtual network of ride access points in Germany, International Journal of Innovation and Sustainable Development, Vol. 5, No. 1, 80-99.
- Hansen, Erik Gunmar; Sextl, Martin; Reichwald, Ralf (2010): Managing Stakeholder Collaboration Through a Community-Enabled Balanced Scorecard. The Case of Merck Ltd, Thailand. In: Business Strategy and the Environment, Vol. 19, No. 6, 387-399.
- Hertz, C. & Godemann, J. (2010): Internet-Supported Sustainability Reporting. Expectations and Reality. Empirical Findings from the German DAX30, in: Quaddus, M. & Siddique, M. (Eds.): The Handbook of Corporate Sustainability: Frameworks, Strategies and Tools, Cheltenham: Edward Elgar Publishers.
- Hertz, C. & Godemann, J. (2010): Internet-Supported Sustainability Reporting: Developments in Germany, Management Research Review, Vol. 33.
- Lüdeke-Freund, F. & Looek, M. (2010): Determinants of Credit Allocation for Photovoltaic Projects. Research Outline and Preliminary Findings from Conjoint Experiments with German Financing Experts, Lüneburg/St. Gallen: Centre for Sustainability Management/Good Energies Chair for Management of Renewable Energies.
- Lüdeke-Freund, F. & Burandt, S. (2010): Universities as Learning Organizations for Sustainability? The Task of Climate Protection, in: Leal Filho, W. (Ed.): Universities and Climate Change: Introducing Climate Change at University Programmes. Climate Change Management Vol. 1. Berlin: Springer.
- Lüdeke-Freund, F.; Müller, J. & Schaltegger, S. (2010): Entwicklung eines praxisreifen Verfahrens zur Entwässerung von stark wasserhaltigen Biomassen aus der Landwirtschaft (Projektbericht, DBU FKZ 23758). Lüneburg: Centre for Sustainability Management.
- Petersen, H. (2010): The Competitive Strategies of Ecopreneurs. Striving for Market Leadership by Promoting Sustainability, in Schaper, M (Ed.): Making Ecopreneurs, Burlington (USA): Gower, 223-236.
- Schaltegger, S. (2010): A Framework and Typology of Ecopreneurship. Leading Bioneers and Environmental Managers to Ecopreneurship, in Schaper, M (Ed.): Making Ecopreneurs, Burlington (USA): Gower, 75-94.
- Schaltegger, S. (2010): Nachhaltigkeit als Treiber des Unternehmenserfolgs. Folgerungen für die Entwicklung eines Nachhaltigkeitscontrollings, Controlling. Zeitschrift für erfolgsorientierte Unternehmenssteuerung, 22. Jg., Nr. 4/5, 238-243.
- Schaltegger, S. (2010): Sustainability as a Driver for Corporate Economic Success. Consequences for the Development of Sustainability Management Control, Lüneburg: Centre for Sustainability Management.
- Schaltegger, S. (2010): Wie sich Verantwortung auszahlt, Visavis Economy, Nr. 3, 9-14.
- Schaltegger, S. (2010): Zukünftige Zyklen. Nachhaltiges Management als unternehmerisches Konzept, MBA-Magazin, April, 48-49.
- Schaltegger, S. & Beständig, U. (2010): Corporate Biodiversity Management Handbook. A Guide for Practical Implementation, Berlin/ Eschborn/ Lueneburg: BMU (Ed.)/GTZ/CSM-Leuphana University Lueneburg.
- Schaltegger, S. & Beständig, U. (2010): Handbuch Biodiversitätsmanagement. Ein Leitfaden für die betriebliche Praxis, Berlin/Eschborn/ Lüneburg: BMU (Hrsg.)/GTZ/CSM-Leuphana University Lüneburg.
- Schaltegger, S. & Burritt, R. (2010): Sustainability Accounting for Companies. Catchphrase or Decision Support for Business Leaders? Journal of World Business, Vol. 45, No. 4.
- Schaltegger, S. & Grünberg-Bochard, J. (2010): The Change Challenge, Science and Technology – Public Service Review, No. 6, 112-113.
- Schaltegger, S. & Petersen, H. (2010): CSR: Von der Vision zur Verankerung unternehmerischer Nachhaltigkeit. Eine Frage von Managementbildung?, in: Theis, F. & Klein, S. (Hrsg.): CSR-Bildung. Corporate Social Responsibility als Bildungsaufgabe in Schule, Universität und Weiterbildung, Wiesbaden: VS Verlag für Sozialwissenschaften, 139-152.
- Schaltegger, S. & Petersen, H. (2010): Vorne dran bleiben. Das Sustainability Leadership Forum im 7. Jahr, Forum Nachhaltig Wirtschaften, Nr. 2, 84-85.
- Schaltegger, S. & Schock, M. (2010): Nachhaltigkeitsmanagement bei deutschen Auslandsinvestitionen, in: Bundesministerium für Wirtschaft und Technologie (BMWi), PriceWaterhouseCoopers & Euler Hermes (Hrsg.): Investitions Garantien der Bundesrepublik Deutschland. Jahresbericht, Berlin: BMWi, 48-49.
- Schaltegger, S.; Windolph, S. E. & Harms, D. (2010): Corporate Sustainability Barometer 2010. Wie nachhaltig agieren Unternehmen in Deutschland? Frankfurt a.M./Lüneburg: PricewaterhouseCoopers/Centre for Sustainability Management der Leuphana Universität Lüneburg.
- Spitzeck, H. & Hansen, E. G. (2010): Stakeholder Governance – How do stakeholders influence corporate decision-making?, Corporate Gover-

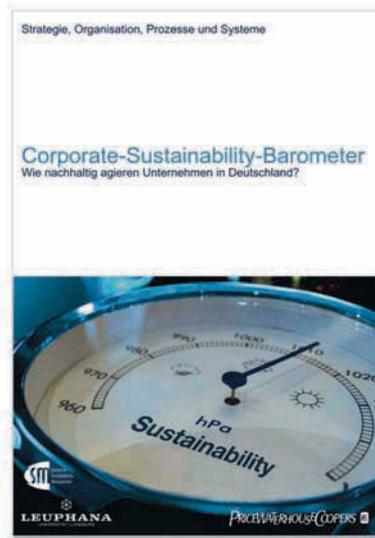
nance: International Journal of Business in Society, Vol. 10, Issue 4.

- Viere, T., Brünnner, H. & Hedemann, J. (2010): Verbund-Simulation. Strategic Planning and Optimization of Integrated Production Networks, Chemical Engineering and Technology Vol. 33, No. 4, 582-588.
- Wagner, M. & Schaltegger, S. (2010): Classifying Entrepreneurship for Sustainable Development: Empirical Analysis of a Conceptual Framework, Journal of Small Business and Entrepreneurship (JESB), Vol. 23, No 3.
- Wall, A. & Behr, F. (2010): Ein Ansatz zur Messung der Nachhaltigkeit von Events – Kernziele eines Nachhaltigkeitsmanagements von Events und Indikatoren zur Messung der Nachhaltigkeit. Diskussionspapier, Lüneburg: Centre for Sustainability Management.

---

## 2009

- Burritt, R. L.; Herzig, C. & Tadeo, B. D. (2009): Environmental Management Accounting for Cleaner Production: The Case of a Philippine Rice Mill, Journal of Cleaner Production, Vol. 17, No. 4, 431-439.
- Debor, S. (2009): Strategic Early Options under an Emerging Emissions Trading Scheme. Implications for US Nitric Acid Companies, Lueneburg: Centre for Sustainability Management.
- Giese, N. (2009): Inhaltliche Evaluation von unternehmerischer Nachhaltigkeitsberichterstattung unter dem Aspekt des Zusammenwirkens von Printberichten und Berichterstattung im Internet. Am Beispiel der Top 10 Unternehmen im deutschen Banksektor, Lüneburg: Centre for Sustainability Management.
- Görlach, S.; Lemken, T.; Liedtke, C.; Onischka, M.; Schmidt, M. & Viere, T. (2009): Unternehmensnahe Instrumente – Systematisierung unternehmensnaher Instrumente bzw. von Instrumentenclustern sowie Grobrasterung und Instrumentenauswahl zur Vorbereitung auf die Phase der Feinanalyse. Arbeitspapier zu Arbeitspaket 4 des Projekts Materialeffizienz und Ressourcenschonung (MaRes). Wuppertal: Wuppertal Institut.
- Herzig, C. & Schaltegger, S. (2009): Wie managen deutsche Unternehmen Nachhaltigkeit?, Lüneburg: CSM.
- Latschan, J. (2009): Sustainable energy: Risks and opportunities of biomass for biofuel. The case of Jatropha cultivation in India. Lüneburg: Centre for Sustainability Management.
- Lee, K.-H. (2009): Why and How to adopt green management into business organizations? The case study of Korean SMEs in Manufacturing Industry, Management Decision, Vol. 47, No. 7, 1101-1121.
- Lee, K.-H. & Shin, D. (2009, Print: 2010): Consumers' Responses to CSR Activities. The Linkage between Increased Awareness and Purchase Intention, Public Relations Review, online first: doi:10.1016/j.pubrev.2009.10.014.
- Lüdeke-Freund, F. (2009): Business Model Concepts in Corporate Sustainability Contexts. From Rhetoric to a Generic Template for "Business Models for Sustainability", Lüneburg: Centre for Sustainability Management.
- Müller, J.; Lüdeke-Freund, F. & Lutzenberger, A. (2009): Dehydration and Pelletisation of Agricultural Biomass by Extrusion, Proceedings of the 17th European Biomass Conference & Exhibition „From Research to Industry and Markets“, 29 June to 3 July, Hamburg.
- Schaltegger, S. (2009): Competence-building in Sustainability, Science and Technology 4, Public Service Review, London, 182-183.
- Schaltegger, S. (2009): Experten für Nachhaltigkeit, Frankfurter Allgemeine Zeitung, 6.11.2009.
- Schaltegger, S. (2009): Von Grund auf nachhaltig Wirtschaften, Financial Times Deutschland, 17.11.2009.
- Schaltegger, S. & Burritt, R. (2009, Print: 2010): Sustainability Accounting for Companies. Catchphrase or Decision Support for Business Leaders? Journal of World Business, doi: 10.1016/j.jwb.2009.08.002.
- Schaltegger, S.; Haller, B.; Müller, A.; Klewitz, J. & Harms, D. (2009): Nachhaltigkeitsmanagement in der öffentlichen Verwaltung. Herausforderungen, Handlungsfelder und Methoden. Studie im Auftrag des Rats für Nachhaltige Entwicklung der Bundesregierung, Lüneburg: Centre for Sustainability Management.
- Schaltegger, S. & Lüdeke-Freund, F. (2009): Wie Nachhaltigkeit den Unternehmenserfolg steigert, io-Management, Nr. 9, 12-15.
- Schaltegger, S. & Petersen, H. (2009): Corporate Social Responsibility (CSR) nachhaltig im Unternehmen verankern. Eine Herausforderung an die Managementbildung, Journal of Social Science Education, 9. Jg., Nr. 3, 67-79.
- Schaltegger, S.; Schock, M. & Butscher, C. (2009): Nachhaltigkeit als Herausforderung für Exportwirtschaft und Exportkreditversicherung. Bedeutung und Rolle von Finanzierung und Umweltprüfung im B2B-Geschäft. Hamburg: Euler Hermes/PWC/CSM.
- Staritz, E. (2009): Umweltmanagementsysteme in europäischen Häfen. Diskussion der Einführung eines Umweltmanagementsystems am Beispiel der Hamburg Port Authority. Lüneburg: Centre for Sustainability Management.
- Tschochohei, H. (2009): Chemikalien Governance. Chemikalienregulierung aus ökonomischer Perspektive. Frankfurt a.M.: Peter Lang.
- Tschochohei, H. & Zimmermann, S. (2009): Governance und Marketdesign. Auf der Suche nach den besten "Spielregeln" – Perspektiven aus Wissenschaft, Praxis und Politik. Frankfurt a. M.: Peter Lang.
- Unger, G. (2009): Die Operationalisierung nachhaltiger Strategiepfade für die deutsche Energieversorgung unter besonderer Berücksichtigung der erneuerbaren Energien. Lüneburg: Centre for Sustainability Management.
- Viere, T.; Prox, M. & Möller, A. (2009): A Material Flow Cost Accounting Approach to Improvement Assessment in LCA, in: International Symposium on a Sustainable Future (ISSF-2010), January 11-13, 2010, Mumbai. Indira Gandhi Institute of Development Research, Mumbai, 120-127.
- Viere, T.; Prox, M. & Möller, A. (2009): Materialflusskostenrechnung – ein Ansatz für die Identifizierung und Bewertung von Verbesserungen in der Ökobilanzierung, in: Feifel, S.; Walk, W.; Würsthorn, S. & Schebek, L. (Hrsg.): Ökobilanzierung 2009 – Ansätze und Weiterentwicklungen zur Operationalisierung von Nachhaltigkeit, KIT Scientific Publishing, Karlsruhe, 45-54.
- Zvezdov, D. (2009): Sustainability Management Accounting: Managing Climate Change Information and Other Sustainability Performance Challenges, in: Professoren der Fachgruppe Betriebswirtschaftslehre (Hrsg.): Klimawandel – eine Herausforderung für die BWL. Dresden: Technische Universität Dresden, 107-121.
- Zvezdov, D. & Schaltegger, S. (2009): Accounting Information and the Accounting Function in Sustainability Management, in: J. E. Purkyne University in Usti nad Labem (Hrsg.): Environmental Accounting – Sustainable Development Indicators. Usti nad Labem: J. E. Purkyne University, 74.



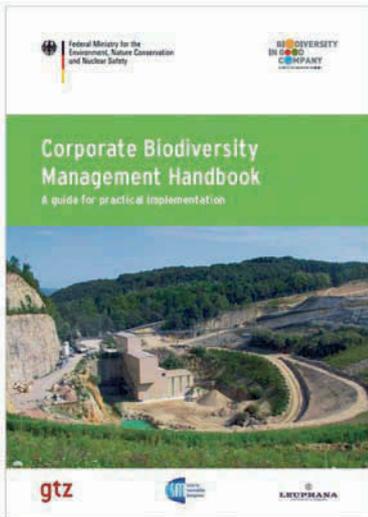
Schaltegger, S.; Windolph, S.E. & Harms, D. (2010):

**Corporate Sustainability Barometer.**

(German title: Corporate Sustainability Barometer. Wie nachhaltig agieren Unternehmen in Deutschland?)

Lüneburg/Frankfurt: CSM & PwC. (available in German only)

A growing number of companies addresses sustainability issues, e.g. by product innovation or reporting. Yet, corporate practice in sustainability has not been systematically researched to date. The report ‘Corporate Sustainability Barometer’ was developed by the CSM and funded by PricewaterhouseCoopers. It captures the state and progress of sustainability management in research and practice. The report is available for download (in German) on the CSM web site.

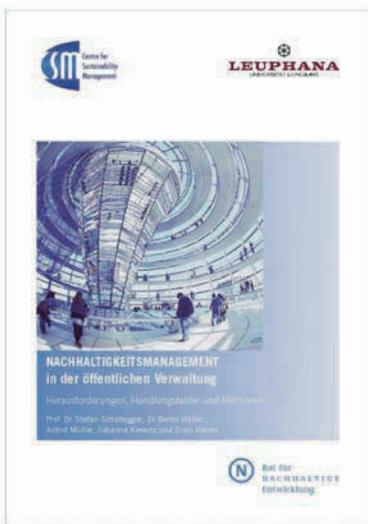


Schaltegger, S. & Beständig, U. (2010):

**Corporate Biodiversity Management Handbook. A Guide for Practical Implementation.**

Berlin / Eschborn / Lüneburg: BMU (Ed.) / GTZ / CSM-Leuphana University Lueneburg. (available in English and German)

The Corporate Biodiversity Handbook offer companies a pragmatic and systematic approach to corporate biodiversity management. The handbook outlines the importance of biological diversity for business and illustrates what companies can do to actively support the conservation of biodiversity in practice. The handbook is available in electronic form under: [http://www.bmu.de/files/pdfs/allgemein/application/pdf/handbuch\\_biodiversitaetsmanagement\\_bf\\_en.pdf](http://www.bmu.de/files/pdfs/allgemein/application/pdf/handbuch_biodiversitaetsmanagement_bf_en.pdf)



Schaltegger, S.; Haller, B.; Müller A.; Klewitz, J. & Harms, D. (2009):

**Sustainability Management in Public Administration.**

(German title: Nachhaltigkeitsmanagement in der öffentlichen Verwaltung. Herausforderungen, Handlungsfelder und Methoden.)

Lüneburg: CSM. (available in German only)

Public administration can play an essential role for the promotion of sustainable development. To investigate the areas of action and approaches of sustainability management for public administration, the Council of the Federal German government commissioned the CSM to prepare a report on management tools and their potential to foster sustainability in the German federal administration.

The report is available for download in German under: [http://www.uni-lueneburg.de/umanagement/csm/content/nama/downloads/download\\_publicationen/CSM-RNE-Kompodium.pdf](http://www.uni-lueneburg.de/umanagement/csm/content/nama/downloads/download_publicationen/CSM-RNE-Kompodium.pdf)