EMAN

Proceedings

Sustainability Accounting and Reporting

The 7th annual conference of the Environmental Management Accounting Network Europe (EMAN-EU)

Thursday 4th and Friday 5th of March 2004
University of Lueneburg, Germany

Centre for Sustainability Management

Fritz Thyssen Stiftung für Wissenschaftsförderung

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

inWent Internationale Weiterbildung und Entwicklung gGmbH Capacity Building International, Germany

Universität Lüneburg

PricewaterhouseCoopers

Welcome
The Centre for Sustainability Management (CSM) of the University of Lueneburg welcomes you to the 7th annual expert meeting of EMAN-EU.

The Topic: Sustainability Accounting and Reporting
The accounting for corporate sustainability and the reporting of the contribution of a company to sustainable development is among the most important emerging issues of corporate accounting. Management is challenged to develop and implement accounting, information management and reporting tools and procedures to compute and communicate the sustainability performance of the company.

Environmental management accounting plays a core role in the development of sustainability accounting and reporting of a company. In this context its task is to embody social issues and to integrate all dimensions of sustainability (economic, environmental and social issues) for the measurement, the company internal and the external reporting of corporate sustainability performance. A special consideration is made for approaches to analyse, implement and report economically rewarding management of environmental and social issues in profit oriented companies and other organisations in pursuit of their own business and organisational interests.

The conference theme addresses the question of how companies and other organisations have implemented environmental, social and sustainability accounting tools and concepts, what experiences have been made in practice and what future challenges lie ahead for the field of sustainability accounting and reporting.

What is EMAN-EU?
The Environmental Management Accounting Network (EMAN) is a network of researchers, consultants, business people and policy advisors interested in environmental management accounting as an approach of corporate environmental and sustainability management. It aims to establish and to provide contact between people with the same interests and to organise regular events for the dissemination and exchange of news and ideas. For joining the network or for learning more about its activities, please visit the EMAN homepage at www.eman-eu.net.

We are grateful to the following sponsors of this event:
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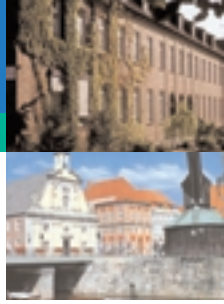


EMAN 2004 Lueneburg – Conference Programme

Wednesday 3rd of March 2004

20:00 Reception for early arrivals in Mälzer's brewhouse

Thursday 4th of March 2004

08:00 – 09:00 Registration and Coffee

09:00 – 09:10 Words of Welcome
Hartwig Donner, President University of Lueneburg, Germany

09:10 – 09:20 Preface to the Conference
Peter Franz, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany

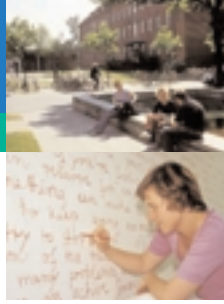
09:20 – 09:40 "Sustainability and Shareholder Value – Is there a Link?"
Forest Reinhardt, Harvard Business School (HBS), Harvard University, USA

09:40 – 10:00 Introduction to the Conference Theme
"Sustainability Accounting and Reporting – Fashion or Durable?"
Stefan Schaltegger, Centre for Sustainability Management (CSM), University of Lueneburg, Germany

10:00 – 10:30 Coffee Break

10:30 – 12:00 Workgroup Sessions
- Measuring Sustainability Performance and Financial Markets I
- EMA and Environmental Management Systems
- Life Cycle Assessment and Life Cycle Costing I
- Sustainability Reporting Standards, Frameworks and their Opportunities

12:00 – 13:30 Lunch



EMAN 2004 Lueneburg – Conference Programme

Thursday 4th of March 2004

13:30 – 14:00 Developments in the EMAN Regional Sections

Jan Jaap Bouma, EMAN-EU
Roger Burritt & Raymond Leung, EMAN Asia-Pacific
Elizabeth Levy, EMAN US and the Americas

14:00 – 15:30 Workgroup Sessions

- Measuring Sustainability Performance and Financial Markets II
- EMA, Eco-Control and Environmental Management Systems
- Life Cycle Assessment and Life Cycle Costing II
- Sustainability Reporting - National Developments in Europe

15:30 – 16:00 Coffee Break

16:00 – 17:30 Workgroup Sessions

- Sustainability Accounting and Operational Issues
- Sustainability Accounting in the Public Sector
- Empirical Studies in EMA
- Sustainability Reporting - National Developments outside Europe

20:00 Conference Dinner

Friday 5th of March 2004

09:00 – 09:20 Towards a Globally Accepted Framework for Sustainability Reporting – the GRI Perspective

Ralph Thurm, Global Reporting Initiative, The Netherlands

09:20 – 09:40 Partners in Responsibility – The Volkswagen Sustainability Information Management

Ulrich Menzel, Volkswagen AG, Germany

09:40 – 10:00 EMA in the Consulting Practice. Recent Trends in Denmark

Birgitte Mogensen & Anne Melchiorsen, PriceWaterhouseCoopers, Denmark

EMAN 2004 Lueneburg – Conference Programme

Friday 5th of March 2004

10:00 – 10:30 Coffee Break

10:30 – 12:00 Workgroup Sessions

- EMA – Case Studies
- Sustainability Accounting in Practice – Europe and America
- Sustainability Reporting – Communication Theory and Drivers

12:00 – 13:30 Lunch

13:30 – 15:00 Workgroup Sessions

- Social Aspects of Sustainability Accounting and Reporting
- Sustainability Accounting in Practice – Asia
- Web-/Internetbased Sustainability Reporting

15:00 – 15:30 Coffee Break

15:30 – 17:00 Workgroup Sessions

- Limits and Problems of Sustainability Accounting
- Sustainability Accounting in Practice – South East Asia
- Sustainability Reporting – Software Solutions

17:00 – 17:30 Good-bye Drink and Concluding Remarks

Stefan Schaltegger, Centre for Sustainability Management (CSM), University of Lueneburg, Germany

Saturday 6th of March 2004

10:00 – 11:30 Guided tour in the picturesque medieval town Lueneburg

11:30 – 12:30 Visit the Museum of Salt
(11 EUR/person for both to be paid at the guided tour)

EMAN 2004 Lüneburg – Workgroups and Presentation

4th March 2004, 10:30-12:00h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
Measuring Sustainability Performance and Financial Markets I (Olaf Weber)	Corporate Sustainability Reporting and its Application in the Socially Responsible Investment (SRI) Community	Esther Garcia	United Kingdom	14.6
	The Influence of SRI Funds on the Environmental Performance of Firms	Olaf Weber	Switzerland	
	Linking Sustainable Investment to the Balanced Scorecard	Samuel Mongrut, Burton Hamner	Peru	
	Sustainability Indexes and Greenhouse Gas Emissions – A Dichotomy?	Pontus Cerin	Sweden	
EMA and Environmental Management Systems (Jan Jaap Bouma)	How to run EMA in daily practice?	Natalie Wendisch, Thomas Heupel	Germany	14.112
	From the Corporate Eco-Balance to Sustainable Material- and Information Flow Management	Bernd Wagner	Germany	
	Integrating Environmental Management Accounting with Environmental Management System: A Philippine Experience	Clarencia Reyes	Philippines	
	Sustainable Management in SMEs. The Experiment of Brescia Companies	Aldo Pilisi, Alessia Venturelli	Italy	
Life Cycle Assessment and Life Cycle Costing I (Gjalt Huppes)	Life Cycle System Delimitation - an Option or a Must for EMA?	Bo Weidema	Danmark	14.1
	Green-e, a Tool for the Tool for the Quantification of Companies' Environmental Performances	Manuele Margni, F. Della Croce, Oliver Jolliet	Switzerland	
	Life Cycle Costing as Part of Management Accounting for Sustainability	Gjalt Huppes	The Netherlands	
Sustainability Reporting – Standards, Frameworks and their Opportunities (Alan Willis)	Environmental Communication, Reporting and Accounting. ISO TC 207 and the 14000 Family in Retrospect and Prospect	Eberhard K. Seifert	Germany	HS 5
	Introduction to the Facility Reporting Project	Elizabeth Levy	USA	
	Corporate Disclosure Demands and Opportunities	Alan Willis	Canada	

EMAN 2004 Lüneburg – Workgroups and Presentation

4th March 2004, 14:00-15:30h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
Measuring Sustainability Performance and Financial Markets II (Ki-Hoon Lee)	Changing Drivers: Accounting for Effects of Carbon Constraints on Shareholder Value Creation - The Case of the Automotive Industry	Niki Rosinski	Switzerland	14.6
	Sustainability and Financial Analysis. An Integrated Framework for the Analysis of the Firm Value Creation Oriented to Sustainability	Noelia Romero Castro, Juan Piñeiro Chousa	Spain	
	The Relationship between Social Performance and Financial Performance within the Context of Sustainability Management	Ki-Hoon Lee	Korea	
EMA, Eco-Control and EMS (Eberhard K. Seifert)	Sustainability For Enterprises (SAFE)	Bernhard Colsman	Germany	14.112
	EPM-KOMPAS. A Tool to Control Environmental Performance (of SMEs)	Edeltraud Günther, Susann Kaulich	Germany	
	Environment-oriented Cost Management (EoCM) and Environmental Management Accounting (EMA) - A comparison	Catalina Berger	Germany	
	Sustainable Process Costing Conception and Practical Challenge	Thomas Heupel	Germany	
Life Cycle Assessment and Life Cycle Costing II (Stefan Seuring)	Life-Cycle Costing – Contrasting the Cost Management and the Environmental Perspective	Stefan Seuring	Germany	14.1
	Use of LCA Tools by DuPont Performance Coatings for Achieving Sustainable Growth	Thomas May	Germany	
Sustainability Reporting - National Developments in Europe (Claus-Heinrich Daub)	Sustainability Reporting in Germany: Requirements, Facts and Figures	Thomas Loew, Jens Clausen	Germany	HS 5
	Corporate SR Switzerland 2002	Claus-Heinrich Daub	Switzerland	
	Consistency and Credibility of Env. Performance and Env. Reporting in European Industry	Marcus Wagner	Germany	

EMAN 2004 Lüneburg – Workgroups and Presentation

4th March 2004, 16:00-17:30h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
Sustainability Accounting and Operational Issues (Roland Scholz)	Evaluating Operational Eco-Efficiency - a Facet of Sustainability Accounting	Roland Scholz, Arnim Wiek	Switzerland	14.6
	Using Operations Research and Knowledge Management in Sustainability Performance Management	Hans-Dietrich Haasis	Germany	
	Equitable Allocation of the Environmental Benefits among the Strategic Business Units (SBUs) of a Corporation through the Use of Modified Accounting Ratios	Benjamin Karatzoglou	Greece	
	Beyond Environmental Cost Accounting: Principles and Empirical Demonstration of Accounting for Sustainable Value	Frank Figge, Tobias Hahn	United Kingdom, Germany	
Sustainability Accounting in the Public Sector (Martin Bennett)	Towards Designing a Process of Stackable Accounting for Sustainable Communities	Dick Osborn, Mike McFarlane, Peter Tegart, Geoff Osborn	Australia	14.1
	Benchmarking and Environmental Management Accounting in the Water Supply and Sanitation Sector	Marco Schouten, Albert Schram	The Netherlands	
	Customer-focused Environmental Accounting: Users' Perspectives on an EMA System	Martin Bennett	United Kingdom	
	Linking Researchers and Practitioners through Benchmarking - The UK's Higher Education Environmental Performance Improvement (HEEPI) Project	Martin Benett, Peter Hopkinson, Peter James, Adam van Winsum	United Kingdom	

EMAN 2004 Lüneburg – Workgroups and Presentation

4th March 2004, 16:00-17:30h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
Empirical Studies (Marcus Wagner)	Challenge and Opportunity in Implementing EMA in Indonesia	Liana Bratasida	Indonesia	14.112
	The Italian Environmental Expenditure 1997-2002	Giorgio Vicini, Franco Pecchio	Italy	
	The Contribution of EU Eco-Industries to Sustainable Development: Accounting Methodology and Results	Johann Wackerbauer	Germany	
	The Influence of Corporate Environmental Strategy Choice on Economic and Environmental Performance in EU Manufacturing: An Empirical Analysis	Marcus Wagner, Stefan Schaltegger	Germany	
Sustainability Reporting – National Developments outside Europe (Naomi Soderstrom)	Env. Reporting through Financial Statements: the Peruvian Evidence	Samuel Mongrut Montalván, Jesus Tong Chang	Peru	HS 5
	Disclosure of Private Information and Reduction of Uncertainty: Environmental Liabilities in the Chemical Industry	Naomi Soderstrom, Stephan Sefcik, Katherine Campbell	USA	
	Env. Reporting of Publicly Listed Companies in Bangladesh	Abdul Hannan Mia	Bangladesh	
	Environmental Reporting in Malaysia: Perspective of the Management	Romlah Jaffar	Malaysia	

EMAN 2004 Lüneburg – Workgroups and Presentation

5th March 2004, 10:30-12:00h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
EMA – Case Studies (Christine Jasch)	What does Sustainability mean FOR the Automobil Cluster Acstyria?	Christine Jasch	Austria	14.1
	The Success of CT Implementation for Dairy Sector in Thailand	Sugunya Bunpaesat	Thailand	
	Directing Organizational Behaviour towards Sustainability through Environmental Management Accounting (EMA). A Case Study at a Coca-Cola Manufacturing Plant in the Philippines	Maria Fatima Reyes, Jonathan San Juan	Philippines	
	Case-Study: REA at Toshiba	Timo Busch	Germany	
Sustainability Accounting in Practice – Europe and America (Carin Labuschagne)	Introduction of the Environmental Management Accounting and Company Experiences in the Czech Republic	Miroslav Hájek, Jaroslava Hyršlová	Czech Republic	14.6
	A Sustainable Cost Accounting (SCA) Methodology for Process Industry Projects in Developing Countries	Alan Brent, Ron van Erck, Carin Labuschagne	South Africa and The Netherlands	
	Comparision of Evaluations of Businesses in U.S., U.K. and Costa Rica	Joanna Becker	USA	
	Applications of Eco-Efficiency Analysis to BASF Life-Cycle Management Practices	Peter Saling	Germany	
Sustainability Reporting - Communication Theory and Drivers (Angela Franz-Balsen)	Sustainability Reporting in the Light of Communication Theory and the Challenge of Professionalization	Gerd Michelsen, Jasmin Godemann	Germany	HS 5
	Just a Paper Tiger? - The Effectiveness of Sustainability Reporting as a Communication Instrument	Fani Cahyandito, Frank Ebinger	Germany	
	Drivers for Corporate Social Responsibility Reporting	Eli Bleie Munkelien, Ingeborg Gravlien	Norway	

EMAN 2004 Lüneburg – Workgroups and Presentation

5th March 2004, 13:30-15:00h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
Social Aspects of Sustainability Accounting and Reporting (Francesco Zingales)	Social Auditing and Accounting as Part and Basis of Social Management Systems (SMS)	Kuno Spirig, Peter Teuscher, Herbert Winistörfer	Switzerland	14.1
	Regulating Business via Multistakeholder Initiatives: A Preliminary Assessment of Corporate Sustainability and Reporting	Emmanuel Adeyinka	Nigeria	
	Towards a Monetised Triple Bottom Line for an Alcohol Producer: Using Stakeholder Dialogue to Negotiate a Licence to Operate by Constructing an Account of Social Performance	David Bent	United Kingdom	
	Balanced Scorecard & Sustainability: Revisiting BSC Framework and Process to Blend Environmental and Social Issues with Financial Control	Francesco Zingales	France	
Sustainability Accounting in Practice – Asia (Nobuyuki Miyazaki)	Green Budget Matrix Model Theory and Cases of Japanese Corporations	Ito Yoshihiro, Hiroyuki Yagi, Akira Omori	Japan	14.6
	Environmental Accounting Research and Practice in China: Current Status and Future	Hua Xiao	China	
	Recent Development of Ecological and Eco-Efficiency Accounting in Japan	Nobuyuki Miyazaki	Japan	
	Economic Value Added Accounting Model	Imran Saleem, M. Saif, Ziaul Islam	India	
Web- / Internetbased Sustainability Reporting (Ralf Isenmann, Kicheol Kim)	Web-based Environmental Management Systems for SMEs - Enhancing the Diffusion of Environmental Management in the transportation sector	Adeline Ries, Tuula Pohjola, Lassi Linnanen	Finland	HS 5
	Internet-based Sustainability Reporting - Framework and Implementation	Ralf Isenmann, Jan Brosowski	Germany	
	Interactive Sustainability Reporting - Target Group Tailoring and Stakeholder Dialogue	Ralf Isenmann, Jan Brosowski, Kicheol Kim	Germany	

EMAN 2004 Lüneburg – Workgroups and Presentation

5th March 2004, 15:30-17:00h

Workgroup (Chair Person)	**Presentation Title**	**Name**	**Country**	**Room**
Limits and Problems of Sustainability Accounting (Pall Rikhardsson)	Quality of Physical Environmental Management Accounting (PEMA) Information - Lessons from Pollutant Release and Transfer Registers (PRTRs)	Roger Buritt, Chika Saka	Australia	14.1
	The Triple Bottom Line: Hot Air or the Face of Sustainability Management Accounting?	Pall Rikhardsson	Danmark	
	Changing Corporate Policies and its' Impact on Assessment Techniques	Jan Jaap Bouma, Karen Maas	The Netherlands	
Sustainability Accounting in Practice – South East Asia (Tobias Viere, Christian Herzig)	Economic and Environmental Information in Productivity Improvement of Sea Food Industry in Thailand	Suporn Koottatep, Chatchai Ratanachai, Sumate Chaiprapat, Panalee Chevakidakarn, Patrichart Visuthisamajarn	Thailand	14.6
	Environmental Management Accounting. Currently and Future in Sustainable Development Strategy in Vietnam	Nguyen Chi Quang	Viet Nam	
	Environmental Management Accounting at Minebea Group Companies in Thailand	Duangmanee Komaratat, Wanpen Krittaphol	Thailand	
	Dissemination of EMA in South-East Asia	Tobias Viere, Christian Herzig	Germany	
Sustainability Reporting – Software Solutions (Andreas Moeller, Martina Prox)	Sustainability Reporting - Software Solutions - Corporate Environmental Reporting based on a XML-DTD and XML-Schema	Jorge Marx Gómez, Ralf Isenmann	Germany	HS 5
	Software Solutions within SAP/R3 to realize Environmental Performance Indicators, Mass Balances and Self Defined Queries for Environmental Management and Sustainability Reporting	Severin Beucker, Thomas Loew, Gunnar Jürgens	Germany	
	Environmental Information Systems as a Link between Technical Experts and Managers	Andreas Moeller, Martina Prox	Germany	

EMAN 2004 Lüneburg – Workgroups and Presentation

Key Speaker

Key Speaker	Presentation Title	Name	Country
4th March 2004, 9:20-9:40h	Sustainability and Shareholder Value – Is there a Link?	Forest Reinhardt	USA
5th March 2004, 9:00-9:20h	Towards a Globally Accepted Framework for Sustainability Reporting – the GRI perspective	Ralph A. Thurm	The Netherlands
5th March 2004, 9:20-9:40h	Partners in Responsibility- Volkswagen Sustainability Information Management	Ulrich Menzel	Germany
5th March 2004, 9:40-10:00h	EMA in the Consulting Practice - Recent Trends in Denmark	Brigitte Mogensen, Anne Søgaard Melchiorsen	Danmark

Abstracts

4th March 2004

Key Speakers

4th March 2004, 09:20-09:40h

Sustainability and Shareholder Value - Is there a Link?

Forest Reinhardt
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Investments in environmental quality or in other public good provision (or, for that matter, voluntary transfers of wealth from the firm to other constituencies in the absence of public goods) might deliver value to shareholders by increasing customers' willingness to pay for the firm's outputs, by reducing the costs of its inputs, or by improving its management of its business risk; but they will not always do so. I will discuss the circumstances under which each of these mechanisms might plausibly increase private value and the pitfalls associated with each.

Sustainability Accounting and Reporting. Fashion or Durable?

Stefan Schaltegger
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Environmental and social accounting and reporting are at the threshold to sustainability accounting and reporting. At present academic institutions and leading companies are still searching for definitions, requirements and approaches to what accounting for corporate sustainability could actually mean. Two basic approaches can be taken to describe sustainability accounting and reporting.
First, sustainability accounting and reporting can be interpreted as a very general umbrella term embracing various very different accounting and reporting methods dealing with aspects of sustainability such as environmental problems, social issues, eco-efficiency, socio-efficiency, etc. Whereas this pragmatic interpretation is without tensions it does neither provide much structure nor any guidance how to support a development to corporate sustainability.
Second, sustainability accounting and reporting can be seen as a goal for a precise concept of collecting, analysing and communicating sustainability issues in an integrative manner. In this view sustainability accounting and reporting is challenged to bring economic, environmental and social issues together, to consider interactions and trade-offs between the dimensions and to provide quantitative information on the overall sustainability performance of the company. Whereas this perspective provides a real challenge for research and business leaders it may be over-ambitious and lead to models which are not acceptable for corporate practice.
Sustainability accounting and reporting is thus challenged to walk between the extremes of a buzzword and a highly abstract academic exercise and to develop pragmatic tools of integrative character which provide management support for clearly described business tasks.

Workgroup Measuring Sustainability Performance and Financial Markets I

4th March 2004, 10:30-12:00h
Chairperson: Olaf Weber

Corporate Sustainability Reporting and its Application in the Socially Responsible Investment (SRI) Community

Esther Garcia
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The proposed paper aims at establishing the link between Life Cycle Analysis (LCA) External Reporting and the impact it has on the Socially Responsible Investment (SRI) community. The paper will try to answer the question: Can indicators be developed to benchmark corporate progress on LCA?
Background: In the past decade the SRI movement has seen great expansion and recognition. As the investment community increasingly develops ethical and SRI funds and competition increases, SRI analysts need to develop new methodologies to benchmark companies' environmental and social policies, management systems and performance in order to make informed investment decisions. SRI analysts may look at a different range of issues depending on the industry sector. For example, in the case of a vehicle manufacture company, the SRI analyst will not only consider in-house operations and management, e.g. environmental management system, but also will look at the progress of such company in developing environmentally sound products by using tools such as LCA.
Fund managers may use different approaches in selecting companies for their ethical / SRI portfolios. They may use in-house teams of SRI analysts or use external resources provided by sustainability rating agencies such as the Ethical Investment Research Services (EIRIS) Ltd.
The proposed paper: At EIRIS, companies have been traditionally benchmarked against each other in the following areas: policies, management systems, reporting, and performance. However, whereas there is currently some standardisation in reporting mainstream emissions, e.g. CO2 (tonnes), there is lack of harmonisation in reporting advances in Life Cycle Analysis. LCA information contained in Sustainability reports is very much ad hoc and based on case studies, making companies difficult to benchmark.
EIRIS has developed a methodology to overcome this situation. The presentation will cover the following topics: The link between LCA and the SRI community
An introduction to EIRIS mainstream methodology
The current status of LCA reporting across sectors, e.g. automotive, electronics.
The development of reporting indicators for LCA. What is the role of EIRIS and the GRI? Is GRI the answer?
The proposed paper will be of relevance to the targeted audience on the grounds that it will reflect how SRI analysts have a major influence on the interpretation and assessment of sustainability reports and on SRI investors' decision making processes. The presentation is completely based on EIRIS' unique methodologies and will be presented to the audience on a PowerPoint presentation.

Sustainability Accounting and Reporting - Abstracts

The Influence of SRI Funds on the Environmental Performance of Firms

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In our study we analyzed the influence of investment by so called Green or SRI mutual funds on the environmental performance of firms. We did a standardized survey in which we analyzed first the environmental performance and second the impact of different drivers on the environmental performance. Using multivariate statistical analyses we could connect the performance and the influence factors independent from the participants perceptions. As one major result we could show that on the one hand firms, which were members in SRI or Green funds performed environmentally better than non members, but on the other hand that the SRI or Green funds as drivers for the environmental performance were less important than other internal and external drivers. The reason for this could be that companies become members of SRI or Green Funds because they do already have a good environmental performance and the membership in such a fund is not a big driver to further improve the performance as other drivers.

Linking Sustainable Investment to the Balanced Scorecard

Samuel Mongrut Montalván, Burton Hamner
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Socially Responsible Investment(SRI)is the fastest-growing sector of the equity investment market. Over 400 profit-driven private-sector investment funds now use social and environmental criteria for their selection of stocks, and at least 10 market indices of socially responsible companies now exist. The criteria used by SRI funds and indices form a market-based definition of a socially responsible company and a basis for performance metrics to be supported by environmental management accounting. This papers presents the results of a statistical survey of the criteria used by the existing universe of SRI funds and indexes. Cluster analysis ranks the criteria by commonality, which enables a company to select performance metrics that will appeal to a given percentage of the SRI market. The metrics are also categorized into a Balanced Scorecard framework so companies have a framework for implementing the metrics. Finally, the model of an Investor-Targeted Sustainability Scorecard is hypothetically applied to three case studies in Peru: A bank (the largest private bank), a mining company (the largest gold mine in South America), and one of the four national pension funds pension funds of Peru.
Funding for the research is provided by the Consorcio de Investigación Económica y Social of Peru.

Sustainability Indexes and Greenhouse Gas Emissions – A Dichotomy?

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A discrepancy is indicated between the emergence of *environmentalism and the sustainability agenda*, and *accomplished environmental improvements*. Despite the increasing number of success stories, environmental and social progress is not keeping up to the same advancement pace. The enormous information asymmetries among actors in society and the dangerous circularity of rating and selection of firms may well obstruct the changing of the *State of the World*. Sustainability indexes may lead to investments in twice as much greenhouse gas emissions per turnover which is probably the opposite of what the environmental conscious individual investors have in mind. Thus, actions that diminish the need for *image building* are suggested. The scope of corporate environmental and social responsibility should be extended to better coincide with the actor who has the largest potentials to make a change, including governmental bodies by strengthened environmental and social public procurement – that is to *Walk the Talk* themselves.

Workgroup EMA and Environmental Management Systems

4th March 2004, 10:30-12:00h
Chairperson: Jan Jaap Bouma

How to run EMA in Daily Practice?

Natalie Wendisch and Thomas Heupel
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The participation in the already finished research project „Implementation of Environmental Cost Accounting into the Environmental Management System of SME's" which was founded by the German Federal Foundation for the Environment induced that most of the companies want to use environmental cost accounting in the long run. Several companies want to optimize the implemented process-based environmental cost accounting by organisational development and by enlargement of their existing ERP-Structure. For it, these companies will be accompanied by the universitary founded consultant agency econova.
Within the next 18 months the selected companies will develop the ecological cost accounting system to an integrated sustainable management system.
At this years conference the author would like to present one selected company and the concepts for organisational change, integrated ecological database and development of human resources - all referring to the modified cost accounting.
Besides the conception, implementation and the achieved results of this second project, the author of this contribution also takes a closer look at internal projects correlating with the efficient use of environmental cost accounting systems. He analyses costs and benefits of sustainable orientated projects for SME's and the advantages which a company achieves while using an integrated environmetal cost accounting system. Several examples are given.

From the Corporate Eco-Balance to Sustainable Material- and Information Flow Management

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Corporate eco-balances started as mass balances of a company's in- and output of resources. Out of input-output-balances environmental indicators in physical terms were derived. Environmental (Performance) Indicators again were the basis for the upcoming environmental reporting in the 90ies. Later it became evident, that the physical indicators had to be translated into monetary terms in order to gain the attention of a company's decision makers. It also became evident that, in order to find the screw points for improvements, it was not sufficient to control in- and output at the borderlines of a company. It proved to be necessary to follow up on the material flows between the points of in- and output, to spot places of inefficiency, of material losses along the material flows. And it appeared necessary to know how much material throughout the company is actually flowing, and where exactly, how much is stored (and where exactly), how much is lost (where exactly) or not used productivity. Interesting enough the project called "eco-effizienz"

showed that out of 15 companies participating in the project 14 had only incomplete and inconsistent information on material flows – in physical as well as in monetary terms.
The project "eco-effizenz" developed a systematic approach to "Material and Information Flow Management" (short: Flow Management) in order

- to review the existing information on material flows in the present information (ERP) system of a company
- to improve this information basis in order to build up an automated material flow efficiency control system (Material Flow Cost Accounting)
- to visualize and improve corresponding information flows that are used to steer material flows
- to develop in cooperation with the people involved along the material- and information flows procedures for permanent improvement (Flow Organization).

To improve the efficiency of material flows means to cut down on costs and on environmental impacts at the same time.
The results of the eco-effizenz project are presently summarized in a Guideline to Sustainable Management of Corporate Material- and Information Flows. This Guideline will be introduced at the EMAN-Conference.

Integrating Environmental Management Accounting with Environmental Management System: A Philippine Experience

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A unique pilot project on Environmental Management Accounting was recently initiated in Cebu City, Philippines. The Philippine Business for the Environment (PBE), in cooperation with the United Nations Development Programme (UNDP)-supported Environmental Management Programme for Industry Competitiveness (EPIC) through its lead implementing agency, Board of Investments – Department of Trade and Industry (BOI-DTI) initiated the implementation of an integrated Environmental Management System - Environmental Management Accounting (EMS-EMA) in selected SMEs in Cebu.
The organizers and implementors of this integrated EMS-EMA programme aimed to promote the adoption of EMS-EMA by private companies to help them improve their environmental, as well as economic, performance. In line with the institutionalization of this thrust, EPIC and PBE co-implemented the Integrated EMS-EMA Programme with the Confederation of Philippine Exporters Foundation (Cebu), Inc. (PhilExport Cebu). PhilExport Cebu agreed to co-implement the pilot project, participated in by its member-SMEs, to assist in strengthening and making them more competitive in national and global markets.

Sustainable Management in SMEs. The Experiment of Brescia Companies

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The Associazione Industriale Bresciana (AIB) four years ago started a five year program to promote the adoption of integrated management systems of quality, environment and occupational health and safety among its member companies and in particular in SMEs. This project and the preliminary results in environmental management system (EMS) implementation (based on ISO 14001 standard) have been presented to EMAN audience at the Fifth Eman Conference, as introduction to EMA experimentation in ten SMEs[1]. We remind that this five-year campaign are involving sixty «pilot companies» of different sizes, operating in different industrial sectors and already having a quality management system (QMS) implemented and certified. In these companies firstly an environmental management system (EMS) and subsequently an occupational, health and safety management system (OH&SMS) will be implemented.
At present 50 companies are involved in the implementation of an EMS and more than half have obtained an ISO 14001 certification. Furthermore, the experts are now working «on the field» in other ten firms to implement an OH&SMS.
To support the Project two activities have been started in parallel, which were very important for the success of the initiative:

- the evaluation of environmental and quality costs and the assistance to companies involved in the Project in implementing an environmental accounting system (EMA) as a part of a quality costing system. These activities have helped us in gathering and convincing the pilot companies to participate;
- the development of instruments and methodologies to characterise the local Province. These instruments give a fundamental support to companies in evaluating their real impact on the site in which they are localised and therefore in verifying the real environmental compatibility of their industrial activities.

AIB Project and the activities linked in are the most effective instrument to address SMEs toward environmental compatibility, basis of sustainable development.
This paper presents the final results of the project on EMS implementation (which includes also the activities on EMA and environmental mapping of the Province), that now is in its final stage (the conclusion of the project is expected for the first months of 2004).

[1] At the Fifth Eman Conference have been presented two papers: 1) Pilisi A. Venturelli A." Introducing Environmental Management Accounting into Small and Medium-sized enterprises" 2) Venturelli A. Pilisi A. " EMA in SMEs: Ten Italian Case Studies". Both are published in Bennett M., Rikhardsson P., Schaltegger S. (2003) *Environmental Management Accounting: Purpose and Progress* Dordrecht, Kluwer Academic Publishers. At the Sixth EMAN Conference has been presented the paper: Venturelli A. Pilisi A " Environmental Accountin System in Small and Medium-sized enterprises. How to adapt existing accounting systemsto EMA requirements"

Workgroup Life Cycle Assessment and Life Cycle Costing I

4th March 2004, 10:30-12:00h
Chairperson: Gjalt Huppes

Life Cycle System Delimitation - an Option or a Must for EMA?

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One of the most important developments of methodology for Life Cycle Assessment (LCA) in the last decade has been the improved understanding how market information can provide a transparent procedure for objective delimitation of the described systems – the product life cycles - i.e. what processes to include and what processes to exclude from the systems. The developments have also resulted in a general solution to the problem of allocation of impacts among co-products from joint production processes. It is the suggestion of this presentation that the system delimitation procedures now applied for consequential LCA are also applicable to Environmental Management Accounting (EMA), also solving many contentious cost allocation issues. Several industry examples of life cycle system delimitation and cost allocation are provided to illustrate these points.

Green-e, a Tool for the Tool for the Quantification of Companies´Environmental Performances

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The increasing pressure from governments, NGO's and the public opinion that companies have to face concerning their environmental performances, lead to the need for an effective and systematic methodology to rapidly assess company impacts and legal compliancy. In-house methods based on qualitative criteria without looking at life cycle burdens of their products or services can cause errors in the identification on a evaluation of environmental priorities, inducing an inefficient use of economic resources.
This paper presents Green-e, a systemic approach that combines life cycle oriented environmental and cost assessments in a quantitative and scientific reliable manner, aimed to become a standard within companies environmental analysis. The methodology allows to rapidly assessing firms life-cycle impacts based on an integrated company-product approach that allows capturing direct as well as indirect burdens. It allows to switch from a company to a product perspective and to merge the two in order to capture a broadest range of impacts. Green-e has been translated into an Internet based tool, aimed to measure the corporate sustainability performance providing companies with quantified and reliable results without the usual excessive and time taking support, through a simple and clear interface and using most common readily available company data. The associated life cycle costing helps companies to identify economically advantageous improvement opportunities. The tool also includes a legal compliancy module that enables companies to quickly analyze their legal responsibilities focusing on essential laws only. The present paper summarizes the main methodological features and illustrates it through the practical examples of a pharmaceutical company and a transportation company.

Life Cycle Costing as Part of Management Accounting for Sustainability

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Management accounting is a decision support tool. Performance measurement is one element in management accounting as feedback on past decisions and as a framework for judging improvement options and strategies. It is mirrored by future oriented analysis, in principle within the same analytical framework. The life cycle based systems view in sustainability analysis has been well developed for environmental analysis. For the non-environmental part of economic analysis, for life cycle costing, a diverging group of tools and methods has developed. The aim of this paper is to clarify the different options for life cycle costing and to indicate how such LCC options may consistently be linked to environmental and social aspects of sustainability. It starts with a short historical introduction and then develops the analytic framework for typifying different approaches to LCC.
Four main dimensions build the framework for analysis, answering the four basic questions involved: which costs; for whom; how aggregated and how modelled cq measured. The cost types may range from budget cost to market cost, collective cost, alternative cost, and social cost. The last option, as in most Cost-Benefit Analysis, would include environmental cost, as damages, while the first, the budget cost, would include the cost of emission reducing measures.
Who is bearing the cost? The cost bearer may vary from an individual producer, the owner or leaser of a product or installation, or to less or more encompassing groups in society, ultimately the world. The global point of view seems a most appropriate starting point for sustainability evaluation, while the individual firm would want to know about its own cost. These different options hence may all be relevant, adding information that each singly cannot convey.
Next, different cost and benefits are to be integrated, as some sum total, like Net Present Value, or as some yearly flow, like an annuity. Cost and benefits may be subtracted, so as to specify profits, and may further be combined with specific cost items like investment cost, eg to indicate profit rate or pay-back time. In most integrated measures on cost, some basic choices relate to different options for discounting, and on how to deal with chance and uncertainty.
The fourth dimension is how effects are modelled for specifying cost. Preferably, this is the same model as is also used for specifying the other sustainability aspects, those of environment and society. Basic options relate to the treatment of time: with the structurally most simple models being steady state, as in LCA, with exogenous time specification as a step towards quasi-dynamic and ultimately fully dynamic modelling.
To bring some order in the multitude of possible combinations some families of LCC may be distinguished. One is related to the concept of total cost of ownership (TOC/TCO) and refers to private cost of a single institution like a firm or government body . A second may be placed around LCA related applications, using steady state modelling, and yearly private cost for the group concerned in the function system. A third is centred around CBA and takes social cost for society as a whole, based on exogenous or quasi-dynamic specification in time.

Workgroup Sustainability Reporting – Standards, Frameworks and their Opportunities

4th March 2004, 10:30-12:00h
Chairperson: Alan Willis

Environmental Communication, Reporting and Accounting. ISO TC 207 and the 14000 Family in Retrospect and Prospect

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The Technical Committee (TC) 207 within the activities of the International Standardisation Organisation (ISO) is supposed to be not only the biggest one – but also is in a continuous process of transcending traditional ISO procedures by multi-stakeholder processes, especially improved by NGO-participation.
After a full decade of work on the initial set and revisions of global standards for environmental management (EMS, auditing, labelling, LCA and EPE), as well as recent and complementary issues (design for the environment, environmental communication, greenhouse gas emissions), a reconsideration of contents and processes is a timely precondition for prospects of the forthcoming next phase and a possible new generation of ISO 14000 standards.
After the 2003 resolutions of TC 207 plenary on several major issues, prepared by a task force „future visions" as well as proposed by the NGO-community (the author being a member of both of them), avenues are open for new work items accompanied by broader participation processes, especially with regard to the new mission of ‚supporting sustainable development'.
This contribution would supply some insider information for public consideration and critical discussion concerning benefits as well as limits of global environmental management standards.

Introduction to the Facility Reporting Project

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The Facility Reporting Project (FRP) is a multi-stakeholder initiative to develop a generally accepted framework for facility-level and site-specific economic, environmental and social sustainability reporting, compatible to the greatest extent possible with the corporate-level voluntary sustainability reporting guidelines developed by the Global Reporting Initiative (GRI). The FRP framework has gone through several rounds of revision with its multi-stakeholder steering panel and a small group of external stakeholders. In late winter 2004, FRP will be releasing a public exposure draft and soliciting comments from all interested stakeholders. Although the FRP will primarily target American facilities at first, comments from global stakeholders are welcome.
Reducing the burden on reporters without reducing the information that the reports will contain has been a major goal of the FRP Steering Committee. This presentation will describe this and other challenges of translating the GRI Guidelines to a facility level, and in particular in making the GRI's social indicators relevant to facility-level reporters and report users.

Sustainability Accounting and Reporting - Abstracts

Corporate Disclosure Demands and Opportunities

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Sustainability performance measurement and reporting have important implications for capital market understanding and evaluation of a company's future earnings prospects and any risks to future corporate value.
Mainstream capital markets as well as socially responsible investors are paying increasing attention to information about the impact of environmental and social performance and risks on future financial performance. Most recently, the risks to company value associated with climate change, Kyoto obligations, and eco-efficient energy use are seen as highly relevant to investment decision-making. In addition, therefore, to reporting protocols such as the GRI Guidelines, there is also the need to strengthen existing regulatory reporting requirements and mechanisms that primarily aim to protect investors. One of these mechanisms is the Management's Discussion and Analysis (MD&A) report (or Operating and Financial Review in the UK), as an annual and interim reporting vehicle that complements the rather more quantitative, prescribed disclosures made in financial statements. For example, the Canadian Institute of Chartered Accountants' (CICA) 2002 MD&A reporting recommendations include new ways of making relevant, significant disclosures about sustainability issues that investors may legitimately need to take into account. Research into the linkages between environmental and financial performance bears out the need for more useful capital market disclosures about sustainability performance and risk. But companies cannot efficiently and reliably report externally on matters for which they have not established robust internal reporting systems and controls. Moreover, in North America, company CEOs and CFOs must now certify that corporate reports to investors present fairly in all material respects the company's financial condition and results. Was there ever a greater opportunity to ensure the inclusion of relevant sustainability information for capital market decision making? This paper explores these disclosure issues and opportunities, from both investor and other stakeholder perspectives.

Environmental Communication worldwide – The new ISO 14063

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At its beginning ISO 14063 was supposed to develop into an international norm regulating environmental reporting. But many players in the ISO arena, especially the US-Americans, objected to this original intention. As a result the upcoming ISO 14063 (to be published in October 2005) will serve as a guideline for all kinds of environmental communication – ranging from brochures, press conferences, exhibitions to other types of public relations activities. One may argue that more stringent standards for environmental reporting would have been easier and more efficient in their implementation. The example of GRI-Guidelines proves that reporting guidelines may do the trick - especially when they are the only ones and powered by UNEP. But what about the many small and medium companies? What do they have as a guideline for their environmental communication? Nothing! In most cases it is not necessary for these companies to prepare an environmental report but to give honest and credible information to customers, employees and neighbors. And who is guiding them on this way? Nobody!

So the present approach definitely has its strong points. International standards should be applicable for all organisations around the world and not only be appropriate for highly developed countries and multinational companies.
This is the advantage of ISO 14063: it represents a solid guideline for beginners as well as for small and medium companies all over the world. And it provides the essentials for good environmental communication as it helps to create an ongoing, credible and also fruitful dialogue with stakeholders. In doing so ISO 14063 goes well beyond environmental reporting offering adequate communication activities to a target group that usually is not listed at any stock exchange and thus is not obliged to give information to investors and analysts. Understanding the importance of dialogue small and medium companies will be able to take first steps in communicating with their employees, their neighbors and the local community – and this dialogue may be better suited for their specific requirements. It is to be expected that once the communication process gets started it will continue and never stop as it will have proved its worth. Nothing compares to this approach.

Workgroup Measuring Sustainability Performance and Financial Markets II

4th March 2004, 14:00-15:30h
Chairperson: Ki-Hoon Lee

Changing Drivers: Accounting for Effects of Carbon Constraints on Shareholder Value Creation
The Case of the Automotive Industry

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Emerging carbon constraints could significantly impact the automotive industry, primarily through pressure to increase the fuel economy (or to lower the CO2 emissions-intensity) of vehicles. As carbon constraints take hold, automotive Original Equipment Manufacturers (OEMs) able to produce vehicles with lower carbon emissions could see market share increase and financial performance improve. In contrast, OEMs that produce more carbon-intensive vehicles may have a diminished ability to compete in global automotive markets with adverse consequences for their shareholder value.
Carbon constraints are already in place in some of the major automotive markets. The European Union and Japan have both made strong commitments to lower the CO2 emissions rates of vehicles. To date, the US has made less of a commitment, but debate over federal Corporate Average Fuel Economy (CAFE) standards continues, while a 2002 California law seeks to regulate vehicle CO2 emissions for the first time. As an indicator of growing pressure in this area, over 60 percent of global sales last year occurred in countries that have ratified the Kyoto Protocol.
However, OEMs do not take into account risks and opportunities related to carbon constraints. Despite the potential of carbon constraints to alter the competitive structure in the automotive industry, OEMs are reluctant to provide information on the materiality of the issue for their business models. Moreover. there is limited information on strategic choices regarding carbon constraints. More specifically, it is largely unclear how OEMs address the challenge of maintaining innovation capacity while responding to carbon constraints at the same time.

Sustainability and Financial Analysis. An Integrated Framework for the Analysis of the Firm Value Creation Oriented to Sustainability

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The maximization of the shareholder value can not longer be considered as an isolated objective. The managerial theory has started to integrate sustainability issues into its different areas (accounting, finance, marketing, etc.) and to develop new/adapt existing tools and instruments to allow the strategic management of sustainability by firms and the capital markets.

The financial analysis, considered traditionally as an appropriate tool to assess a firm's financial and economic situation and guide the decision making processes of firms and financial markets, should embrace the sustainability issues into its logic, under some kind of scheme or framework that allows the evaluation of a company's sustainable management system and the impact of sustainability issues on financial performance. An integrated model is needed that takes account of the social, environmental and economic/financial performances of a firm and their expression under both quantitative and qualitative, accounting and non-accounting, physical and monetary data. In this paper we propose a conceptual model for the financial analysis of the firm value creation oriented to sustainability.

The Relationship between Social Performance and Financial Performance within the Context of Sustainability Management

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The term, corporate sustainability or sustainable management becomes popular in academics and practices. In general, corporate sustainability is a business approach to increase sustainable competitive advantage in triple bottom line - environmental, social and economic aspects. The trend in a business society becomes clear that the social performance became one of key indicators within sustainability management. For example, the GRI (Global Reporting Initiative) sustainability reporting guidelines in 2002 gives a more emphasis upon the social aspect of corporate sustainability. However, it is not easy task to measure and report corporate social performance in a quantitative manner. More important question is how to reflect the relationship between social and financial performance quantitatively.
This study attempts to identify the relationship between the social and financial performance based upon the data provided by the Economic Justice Institute (EJI)* and the Korea Information Service (KIS)**. The social performance consists of three categories: soundness of corporate activity (SCA), fairness of corporate activity (FCA) and social contribution (SC). The financial indicators include return on assets (ROA), current ratio (CR) and debt-to-equity ratio (DR) in the period of 2000~2002. This study finds that there is a significant positive relationship between SCA and ROA, SCA and CR while there is a significant negative relationship between SCA and DR. In addition, this research identifies that there is a significant positive relationship between FCA and ROA, FCA and CR while there is a significant negative relationship between FCA and DR. The study also finds that there is a significant positive relationship between SC and ROA. This study therefore implies that there is a general indication to show a positive relationship between social and financial performance in Korean industries.

* The Economic Justice Institute (EJI) provides the Korea Economic Justice Index, the only social performance index in Korea annually. EJI is one of major institutes to measure and report corporations' contributions to the society in Korea.

** The Korea Information Service (KIS) provides financial analysis and crediting service in Korea.

Workgroup EMA, Eco-Control and EMS

4th March 2004, 14:00-15:30h
Chairperson: Eberhard K. Seifert

Sustainability for Enterprises (SAFE)

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The following paper illustrates the integrated sustainability solution 'SAFE-Cycle'.
Sustainability can only be reached by the real integration of economical, environmental and social excellence of a company. Exemplified through a practical case the paper will show how this three dimensional excellence can be realized with the 'SAFE-Cycle' and its central element, the enlarged Sustainability Balanced Scorecard (S-BSC). The paper will step-by-step explain the steps of the 'SAFE-Cycle': Status quo analysis – goal and strategy setting – S-BSC developing – deducting innovative operational actions – measurement and communication – feedback and adjustment.
Furthermore, the paper will show the necessity of a sustainable orientation of a company if future goals shall be reached successfully. It will be analysed that there is a causal connection between the sustainability and the long-term success and between the three dimensional excellence and the 'SAFE-Cycle' with its S-BSC. This will be done by emphasizing the short-term and the long-term value preposition of the 'SAFE-Cycle' and the integrated S-BSC.
Taking up the actual economic situation of many companies the paper finally will explain why 'sustainability' and the 'SAFE-Cycle' are no buzzwords or nice-to-have but powerful possibilities to solve actual and future issues.

EPM-KOMPAS. A Tool to Control Environmental Performance (of SMEs)

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To assure the sustainable existence of a corporation, it is necessary to use targeted strategic action with all available information about the corporation (strengths and weaknesses) and its environment (opportunities and threats). To realize this the EPM-KOMPAS as a management instrument gives support

- ✓ to identify strengths and weaknesses of the corporate environmental performance and
- ✓ to identify opportunities and threats of the environment and further more
- ✓ to set targets and continuously improve the strategy.

Due to their high prevention potential concerning environmental impacts as well as their new tasks resulting from increased demands of bulk customers SMEs have to find new ways. These enterprises have to be motivated to act strategically and environmentally-oriented. They have to be supported by their efforts. Difficulties concerning this process of strategic environmental information, accounting management and decision-making in SMEs can be solved by EPM-KOMPAS.

Understanding control as a subsystem of management it has to supply all information supporting the corporate achievement of objectives. This means providing decision-maker with appropriate information in a appropriate way to an appropriate time.
Thus the company has the opportunity

- to fit to changed circumstances of its environment ("adoption capability")
- to coordinate corporate actions and decisions ("coordination capability")
- to react to changes ("reaction capability").

Hence further requirements result:

- ✓ support to collect and structure information and
- ✓ support to make decision to benefit strengths and opportunities and avoid weaknesses and threats respectively.

Due to that EPM-KOMPAS is developed (especially for SMEs) to offer recommendations for developing strategic actions and integrating environmental aspects in the corporate decision process by an eight-step-circle. One of those steps is to select master parameters for corporate environmental performance to reduce the complexity of corporate environmental aspects.
EPM-KOMPAS does not only support information but mainly decision-making and can be used for an early recognition and identification of strengths/weaknesses and opportunities/threats concerning environmental performance.

Environment-oriented Cost Management (EoCM) and Environmental Management Accounting (EMA) – A Comparison

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Integrating all dimensions of sustainability is the task of PREMA® (Profitable Environmental Management), a tool developed by the Pilot Programme for the Promotion of Environmental Management in the Private Sector of Developing Countries (P3U) of the German Agency for Technical Cooperation (GTZ). PREMA was developed and is applied by P3U in co-operation with international partners in more than 30 countries world wide.
With PREMA, which was developed for SME in developing countries we go one step further compared to EMA, since PREMA takes all three dimensions of sustainability into consideration: economic, environmental and social/organisational aspects. A brief comparison of EoCM and EMA shows the differences and similarities of the two approaches according to the three dimensions of sustainability:
Both tools are based on the NPO concept for accounting the data which derives from material, water and energy flows. The detail of description of accounting is medium at EoCM since it gives formats for accounting and investment calculations. EoCM concentrates on principles of NPO costing and is adjustable to SME through a step-by-step implementation of the method. Concerning EMA, the depth of description is high since it gives formats with a very high degree of detail and is thus complex for SME to apply. Within EoCM, organisational learning (personnel, team and organisational development) is a core element to guarantee the implementation in the company and offer benefits beyond the instrument in other areas of the company's activities. Moreover, EoCM influences all decisions within the company and also allows the use for external reporting. EMA emphasises the internal use for environmental management systems and performance evaluation. The instrument would allow a double win (cost reduction and improving environmental performance), but easing implementation through elements of organisational learning is not integrated. The method of implementation at EoCM is a part of the step-by-step approach to environmental management and

accounting within Profitable Environmental Management (PREMA). EMA is a replicable method, but the ways of interpreting the data and the answer to the question "how to develop and implement measures to improve the situation" is not included. EMA stresses the benefits for external reporting, disclosure (possibly due to its use in "developed countries" up to now) which is less important in developing countries. EoCM is a mature method, already tested, documented in cases in various countries. The accounting part of EMA is also mature, but only few cases are documented, mostly in form of pilot projects in developed countries. As a benefit EoCM details the effects for all three dimensions of sustainability (cost reduction, improving environmental performance and organisational learning).

Sustainable Process costing conception and practical challenge

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Target of the already finished research project „Implementation of Environmental Cost Accounting into the Environmental Management System of SME's" which has been presented during the last two EMAN conferences was to develop a cost accounting system being applicable for small and medium sized enterprises.
Beneath classical economical costs this cost accounting was expected to ascertain and expose as well ecological and social costs.
The necessary analysis of classically and ecologically oriented cost accounting literature as well as the participations in the last two annual conferences of the EMAN network induced a self-contained conception as a synthesis of the American "Activity based costing" and the German concept "Process based costing". While during the last two conferences the contributions of Heupel and Wendisch were directed to the practical implementation of environmental cost accounting the team of authors now would like to present the theoretical concept of "Sustainable process costing" being as well the content of the dissertation of Mr. Thomas Heupel.
Regarding the differences between the American form of the ABC and the German historically grown "Process based costing" a concept shall be presented considering the efficiency of resources and manpower and the satisfaction of employees on the same level with the classical parameters production costs and profit.

Workgroup Life Cycle Assessment and Life Cycle Costing II

4th March 2004, 14:00-15:30h
Chairperson: Stefan Seuring

Life-Cycle Costing – Contrasting the Cost Management and the Environmental Perspective

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The term life-cycle costing is used in different context. One reason for this variety in terminology and related concepts is that life-cycle costing esteems from various backgrounds. Separating the term into its two parts, there are the marketing based product life-cycle concept as one important historic basis. Along this, cost management has long played a central role. Simplified, the aim is to manage all cost along the life-cycle of a product or service to yield minimal overall cost. Traditionally, environmental issues are not considered among this concepts. Comparatively, life-cycle assessment based life-cycle costing is a rather development. While it is based on a wider perception of the environmental product life-cycle, far mainly on direct cost calculations are taken into account. Yet, such approaches fall short of (1) integrating the full range of costs, such as typically done in (environmental) management accounting, (2) allowing to actively manage all related cost and (3) extend accountability of companies related to the life-cycle of their products beyond cost measure. Hence, it is the aim of this paper to present a selective review of life-cycle costing literature, which allows to point out, where traditional management driven and environmentally based life-cycle costing have similarities and differences. Relating this to the wider framework of environmental management accounting will allow to highlight the need for further developments.

Use of LCA Tools by DuPont Performance Coatings for Achieving Sustainable Growth

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Coatings, adhesives and electrical insulating materials are semi-finished products which may have a major environmental and toxicological impact in their stage of application. So any reasonable decision about product and process alternatives has to take into account the whole life cycle from raw material extraction to the end of life of coated objects. Therefore DuPont Performance Coatings has made substantial contributions to the development of LCA databases which reflect typical coating processes. The main impact of coatings is linked to their VOC content and to the total energy which is consumed to manufacture and apply them. Total VOC emissions and their impact are identified as a major issue for non compliance with the aim of sustainable development. So product and process choices will have to take into consideration this aspect and develop decision models which align business development targets with societal development. Ambient air quality targets, national emission ceilings, emission inventories and other indicators are helpful for this alignment process, and they are essential links to make general visions operational.

Workgroup Sustainability Reporting - National Developments in Europe

4th March 2004, 14:00-15:30h
Chairperson: Claus-Heinrich Daub

Sustainability Reporting in Germany: Requirements, Facts and Figures

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The first German environmental reports where published in the late 80- ies by companies in the chemical industry as an reaction to their poor public image regarding their environmental performance. Environmental reporting became a success-story in the 90- ties with about 200 voluntary environmental reports and about 3000 EMAS statements. About ten years later in the ends of 90-ies the first sustainability reports appeared. Now internationally as in Germany there is a significant number of sustainability reports and environmental reporting appears to be old fashioned.
Reporting is seen as a major element of corporate socially responsibility not only by the EU. Reporting has got several aspects: On one hand it reflects the accountability of industry towards society in certain issues, on the other hand it is a voluntary contribution to the dialog between companies and their stakeholders. Furthermore the process of preparing those reports has a significant impact on the internal learning processes of a company. Against this background the discussion on the content of sustainability reports is of particular importance. IÖW in cooperation with future are currently developing a systematic framework with the requirements on the content of high-quality sustainability reporting. Based on this framework a ranking of German sustainability reports will be carried out. On the EMAN conference we would like to give an intermediate insight on our actual work.

Corporate Sustainability Reporting Switzerland 2002

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The first in-depth examination and assessment of corporate sustainability reporting in Switzerland was launched and carried out by members (collaborators) of the Institute for Sustainable Management at the University OAS Northwestern Switzerland Aargau and the research network "sustainresearch" Basel.
The examination's subject matter included the complete reporting of the biggest Swiss companies that is published periodically such as annual, environmental, social, sustainability or health & safety reports.
The team developed a new methodology consisting of a list of criterions which is based on the GRI Sustainability Reporting Guidelines and other sources, a scoring system and a basic rating scale.
The object of the examination resulted in 9 industrial sectors. The rate of return amounted to 75% (76 reporting back out of 103 addresses). Two multinational groups are leading the Top10 list followed though by two "classical" Swiss companies. Surprisingly quite a few global players are to find far back in the ranking list whereas some rather small companies came off remarkable well.

Consistency and Credibility of Environmental Performance and Environmental Reporting in European Industry

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This paper identifies and analyses the association between environmental performance and corporate environmental reporting in the paper and electricity industries in Germany and the UK. After discussing environmental performance measurement and environmental reporting in general, the major empirical findings from a cross-sectional survey of corporate environmental reports and environmental statements as well as environmental performance indicators for air and water emissions are reported. The findings suggest that consistency between environmental performance and environmental reporting is rare, although future credibility of companies depends on it. Therefore, the paper concludes with a number of recommendations, especially the need for more standardised indicators and reporting procedures.

Workgroup Sustainability Accounting and Operational Issues

4th March 2004, 16:00-17:30h
Chairperson: Roland Scholz

Evaluating Operational Eco-Efficiency – a Facet of Sustainability Accounting

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The concept of eco-efficiency has been discussed in the environmental management discourse since more than one decade and has been established as one important facet of sustainability accounting. Management sciences mostly deal with eco-efficiency on the company or on the product level. In this paper, however, we focus on the operational level of eco-efficiency. If we assume that companies have a special budget for environmental investments the question arises, which domain of operation is the most eco-efficient one. This paper outlines a procedure for calculating the eco-efficiency on the operational level and for an appropriate management decision support tool. This is done when considering different environmental operations or investments in various domains, such as noise protection, nature conservation, energy reduction, and remediation of contaminated soil. We will demonstrate the procedure exemplarily by a case study on the Swiss Railway Company (SBB) and will discuss the practical problems of applying and implementing the procedure.

Using Operations Research and Knowledge Management in Sustainability Performance Management

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The aim of this paper is to describe a tool set for Sustainability Performance Management. Using this set, the success of sustainable business can be presented, measured and evaluated. By this a sustainability controlling is realizable and the business innovation potential will be increased. The tool set consists of tools for performance measurement, performance profiling and performance actions simulation. Starting with an elaboration of requirements for business performance management, methods of Operations Research are outlined, applicable for performance measurement. These methods are based on fuzzy criteria ranking and numerical taxonomy. Moreover in line with performance profiling an instrument is shown for the identification of measures and for representing the relationships between measures and criteria. This creates the base for performance actions simulation, taking into account elements of knowledge management. Finally, the use of the tool set for Sustainability Performance Management in practice is discussed.

Equitable Allocation of the Environmental Benefits among the Strategic Business Units (SBUs) of a Corporation through the Use of Modified Accounting Ratios

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For a number of years companies have been exclusively evaluated according to their economic performance. The diffusion of the Sustainable Development (SD) principles in business practices has introduced the necessity for a simultaneous integrated assessment of the corporate economic, environmental and social performances. Continuous technological, political and legal evolutions attest to the fact that this diffusion will continue and Sustainable Development principles will soon have to be implemented in all sectors of the European corporate reality. Such evolutions involve a number of Recommendations, Directives, Initiatives, National and International Laws.
Yet, the ultimate criterion for the evaluation of a corporation's performance remains its profitability. Managers, shareholders, financial intermediaries emphasize and base their decisions on the various accounting produced ratios of return (RoA, RoE, RoCE, Residual Value) found in the Annual Reports issued by the companies.
This paper examines the question of whether traditional accounting ratios, measuring the various types of return for any company, encourage or discourage the implementation of those investment plans that aim at improving the environmental performance of companies. A number of international empirical studies have statistically proven the positive relationship between the environmental performance of firms and their corporate values (unfortunately no relevant Greek studies were detected in the literature). The *thesis* defended in this paper is that traditional accounting indicators, as used, are inadequate and misleading for SD applications. The reason is that they are embedded on the book value of the firm assets and owners' equity, a value which diverges from the real corporate value defined as the traded amount for the stock of the firm. So, although investors tend to reward proactive companies by increasing their corporate values, this practice does not reflect on the SBU return ratios, which usually set up the basis for SBU management rewards and bonuses, thus discouraging relevant managerial initiatives. The *suggested solutions* involve a number of adjustments of the return ratios either in the way financial benefits are allocated among the SBUs or, by use of the Tobin's Q, in the way that the capital used is being measured. Such adjustments will allow the Return ratios to record and allocate the positive economic impact generated by the more sustainable attitude of each SBU and will encourage the decision makers towards this direction.

Beyond Environmental Cost Accounting: Principles and Empirical Demonstration of Accounting for Sustainable Value

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Environmental cost accounting, as discussed during the last decade, focuses on valuing the burden or damage that is associated with economic activity of companies. Especially when it comes to corporate sustainability accounting many scholars posit that sustainable corporate management and accounting must take into account the external environmental

and social cost of corporate activity (e.g. Atkinson 2000; Huizing & Dekker 1992). However, this focus on environmental and social full cost accounting suffers from severe methodological and practical problems as the valuation of environmental and social damage is both difficult and still controversially discussed. Only recently, an approach to assess the sustainable performance of companies based on opportunity costs has been developed (Figge 2001; Figge & Hahn forthcoming). This approach follows the logic of the financial markets to assess the value of capital and allows to overcome some fundamental problems of cost accounting. In this paper we demonstrate the methodological rationale as well as the empirical applicability of an accounting for sustainable value. The paper will be divided into two major parts. In the first part we explain the principles of accounting for sustainable value and show how it can serve for assessing both the sustainability of a company's past performance as well as its contribution to achieve sustainable performance targets such as the Kyoto targets. In the second part we elaborate on a comparative case study where we apply these principles to assess the past as well as the prospective sustainable performance of two companies using real world data. The paper concludes by drawing up the implications for a more complete understanding of sustainability accounting, for fruitful avenues for empirical research, and possible corporate applications in practice.

Workgroup Sustainability Accounting in the public sector

4th March 2004, 16:00-17:30h
Chairperson: Martin Bennett

Towards designing a process of stackable accounting for sustainable communities

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The authors have initiated a grassroots process of adaptive innovation based on the *learning selection* model. Published data reflecting change in natural, built, and human, capital stocks for business entities and local authorities within a local government area are being placed in a sustainability accounting framework. The use of international statistical standards in the collection and publication of the data enables comparison over time and space, plus vertical aggregation, i.e. stackable accounting. The Eurobodalla Shire Council has developed its own sustainability policy through integrating separate reporting requirements on states of physical, built, and social, environments within its jurisdiction, and acts as product champion in this process. Pilot sites in Australia and elsewhere in the Asia-Pacific region, in Europe and North America are being negotiated with colleagues to establish a learning network. Using visual language is a key feature of the design process to accelerate understanding the integrative nature of sustainability accounting. Communication during the accounting/reporting phase, in discussion of methods and results, and in the decision-making elements of the process, will be through visual language. The presentation at EMAN-Europe7 will report progress in adaptive innovation by researchers, practitioners, and other key stakeholders since the submission of this abstract.

Benchmarking and Environmental Management. Accounting in the Water Supply and Sanitation Sector

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Although among practicioners a consensus seems to have emerged about the fundamental elements of an Environmental Management Accounting (EMA) system, large-scale implementation in companies can not yet be observed.
The UN Expert's group proposal "Environmental Management Accounting: Procedures and Principles" (1998) has been a great step forward, but few companies have been able to link it to market or regulatory processes. Recently, in the water supply and sanitation sector attempts have been made to link environmental costs accounting to environmental management and performance through voluntar benchmarking programs. Within this sector this has created an embryonic form of an EMA system. Case-studies from the Netherlands of

waste water (Unie van Waterschappen, Rioned) and water supply (VEWIN) are presented to show the link between EMA and benchmarking efforts. Some recommendations as to how to fortify these links are made in the paper.

Customer-focused Environmental Accounting: Users' Perspectives on an EMA System

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This paper will report on a project to review and evaluate the environmental accounting system (EAS) of the Environment Agency of England and Wales in terms of the potential value of the output information to its intended recipients and consequently the design of the system and its requirements for data.
The interim results which will be reported are taken from a series of interviews with a range of managers across the Agency who have been identified by the system's promoters as likely to find the information relevant and supportive of improvements in environmental and business performance.
Initial results indicate a high level of receptiveness to the principle of environmental accounting and a readiness to support this if possible, but little a priori concept of what environmental accounting might represent in practice and how this could inform their own work, suggesting that a "user needs" approach may be more successful than a "user wants" approach. However there were general doubts on their credibility of the information which is reported, which would require further investment in the system and in data capture.

Linking Researchers and Practitioners through Benchmarking - The UK's Higher Education Environmental Performance Improvement (HEEPI) Project

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This paper describes the work of the HEEPI project, which began in 2001 and is financed by the Higher Education Funding Council. It is run by academics but works closely with estates, finance, procurement and other practitioners. The project's aims are to improve the quality of data on the quantities and costs of energy and water consumption and waste disposal in the sector, to use this data to develop benchmarking activities, and to develop the capacity of practitioners to achieve positive environmental change within their institutions such as through an improved understanding of whole-life costing techniques. The paper describes the results of the activities undertaken to date, and reflects upon their implications for general practitioner-focused sustainability accounting and benchmarking activities.

Workgroup Empirical Studies

4th March 2004, 16:00-17:30h
Chairperson: Marcus Wagner

The Italian Environmental Expenditure 1997-2002

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How much do a nation and its industrial compartment spend on environmental protection? What kind of political and industrial objectives for environmental protection and sustainability are pursued? The paper illustrates a research carried out to analyze both public and private environmental expenditures in Italy. The survey on the public sector (covering six years between 1997 till 2002) has focused on the Italian Ministry of Environment expenditure connected to the economic activities (EPEA classification). Whereas for the private sector it has taken into account the environmental expenditures of four "sensitive" industrial activities: oil and gas, petrochemical, manufacturing, leather and textile industry. The Small and Medium Enterprises (SME) have been investigated directly by a questionnaire, while more than 20 big companies have been ranked on the basis of the environmental expenditures taken from their Reports.

The Contribution of EU Eco-Industries to Sustainable Development: Accounting Methodology and Results

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This paper presents a methodology to collect economic data on the environmental industry in a manner that is consistent with the OECD/Eurostat 1999 definitions of the sector. Eco-industries have been defined according to the definition contained in "The Environmental Goods and Services Industry – Manual for Data Collection and Analysis" (OECD/Eurostat, 1999). This defines eco-industries as "activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use".
The EU market for environmental goods and services amounted to around 183 billion Euro (Bn euro) in 1999, or equivalent to 2.3% of the EU's GDP. An analysis of the trade in environmental products and services based on trade code analysis shows that in 1999 the EU operates a trade surplus of around 5 Bn euro in environmental products and services with the rest of the world. The eco-industries are a significant sector of the EU labour market. Direct environmental employment, due to operating expenditure and the employment due to investment from both pollution management and resources management, totals over 2 million jobs in the European Union.

The Influence of Corporate Environmental Strategy Choice on Economic and Environmental Performance in EU Manufacturing: An Empirical Analysis

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The paper provides a detailed discussion of the relationship between environmental and economic performance at the firm level and in particular the influence of corporate environmental strategy choice on this relationship. After formulating a theoretical model for the relationship, it reports the results of a new empirical analysis of the relationship carried out for the European manufacturing industry. The empirical analysis uses new European data to test hypotheses derived from the theoretical model. It analyses survey data of British and German manufacturing firms and for the first time applies the Environmental Shareholder Value concept to define corporate environmental strategies. The analysis finds that for firms with a value-based environmental strategy the relationship between environmental performance and different dimensions of competitiveness (e.g. those that are image-related and thus also influenced by environmental and sustainability reporting) is more positive than for firms without such a strategy.

Workgroup Sustainability Reporting – National Developments outside Europe

4th March 2004, 16:00-17:30h
Chairperson: Naomi Soderstrom

Environmental Reporting through Financial Statements: The Peruvian Evidence

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Since 1990's there have been several proposals worldwide concerning environmental reporting, but few of them are related to environmental reporting through financial statements. Nowadays there is still a need for a proposal that encompasses key environmental concepts, underlying principles, qualitative characteristics, and the specific regulatory treatment of environmental costs and liabilities for reporting through annual financial statements. Recently, the Federation of European Accounting Experts (FEE) has made a proposal for a comprehensive conceptual framework (underlying principles and qualitative characteristics) for environmental reporting, while the United Nations Division for Sustainable Development has proposed the use of specific environmental management accounting (EMA) tools for internal and external accounting recognition of environmental costs and revenues. Furthermore, the European Commission has made a recommendation for the regulatory treatment (recognition, measurement and disclosure) of environmental costs and liabilities through financial statements. In this work, one links the three previous proposals in order to propose a comprehensive process for environmental reporting through annual financial statements. Using this framework one shows how Peruvian firms, which have complied to the environmental standard ISO 14001, perform in the different aspects of the process. Furthermore one offers policy recommendations in order to ease the implementation of the process in Peru.

Disclosure of Private Information and Reduction of Uncertainty: Environmental Liabilities in the Chemical Industry

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We investigate the potential uncertainty-reducing role of accounting information in the context of contingent Superfund liability valuation. We first develop theoretical arguments for the way reduction of uncertainty regarding these contingent liabilities is expected to affect

security prices. Empirical proxies are developed for two types of uncertainty surrounding contingent Superfund liabilities: *site uncertainty* and *allocation uncertainty*. In a valuation framework, we then investigate whether financial statement disclosures and accruals reduce uncertainty and thereby affect security valuation. Specifically, we analyze the interaction of private information contained in firm disclosures and accruals with inherent uncertainty surrounding contingent Superfund liabilities. Results suggest that in a regulatory environment allowing substantial reporting discretion, firm-provided financial statement information affects valuation of contingent Superfund liabilities by reducing uncertainty. Further, we find that information revealed through accruals versus disclosures is differentially effective at reducing.

Environmental Reporting of Publicly Listed Companies in Bangladesh

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This paper aims at identifying the present position of environmental reporting of the public limited companies in Bangladesh. The study has been conducted to see whether enterprises are accommodating any financial and non-financial information about environment in their annual report. The study has been conducted based on secondary published information in annual reports of the selected enterprises. For the purpose of the study annual reports of all the publicly listed and renowned public companies were studied. The opinion of the concerned authorities in the company and government levels also was solicited to arrive at a conclusion.
It has been found that a negligible proportion of the enterprises includes minimum environmental report in their published books of accounts. It was revealed that the sense of social responsibility, good working environment, World Bank guideline, buyer's satisfaction and the safety and security of the community geared up the environmental reporting by the companies. The study also identified several factors that did not motivate the company to incorporate environmental reporting. These were non-compulsion of environmental reporting, less awareness of the environmental reporting, less or no provision for environmental specialist in the companies, and non-pursuance of the mid level or operating managers of the companies even of the external auditors for the inclusion of environmental information in the annual report of the companies.
The presentation will include an introduction stating the scenario of public enterprises and their reporting system in Bangladesh, literature reviews regarding environmental reporting, the objective and methodology of the study, the findings and discussion there off. The presentation will end up with conclusion and recommendations made based on the findings.

Environmental Reporting in Malaysia: Perspective of the Management

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This study examines the issue of environmental reporting from the perspective of the management of corporation in Malaysia. Specifically, this study investigates whether the managers' awareness of the environmental issue, managers' perception on the awareness of the communities on the environmental issue, building of corporate good image and type of

industry influence managers to report environmental information. This study also examines the type of media preferred by managers to report environmental information. The results of the study support the legitimacy theory that companies use environmental reporting as a tool to legitimize their existence in the society. The main purpose of reporting is to build a good corporate image. Managers' awareness of the issues, managers' perception of the awareness of the public on the issues and types of industry are however not strong enough to justify the reporting of the information. Additional analyses, based on an open-ended question reveal quite the same finding that the main reason managers provide environmental information is to shape good corporate image. The most preferred to report the information is in the Special Environmental Report.

Abstracts

5th March 2004

Key Speakers

5th March 2004, 09:00-10:00h

Towards a Globally Accepted Framework for Sustainability Reporting - the GRI Perspective

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Protecting our world and using its resources wisely is an ultimate challenge facing humanity in the 21st century. As the leading international sustainability reporting framework, the Global Reporting Initiative (GRI) is playing a vital role in helping organisations around the world define, measure and report their contribution to the social and environmental conditions and economic realities of their communities. GRI does this through a process that facilitates involvement from a wide range of audiences that are affected by an organisation. GRI collaborates with these 'stakeholders' from business, labour and civil society, soliciting their creative input. The result is a working example of an open 'public policy network'. This 'process' aspect of GRI's work is as important as its Sustainability Reporting Guidelines and other products. GRI's mission is to make reporting on economic, environmental and social performance as routine as financial reporting. GRI has a very strong market position at a time of growing demand for rigorous sustainability reporting. Its goal in the period 2003-2005 is to consolidate this position and to respond effectively to the growing demand for new GRI products and services. The presentation will give an update on existing and future developments about the emerging accountability landscape from a GRI perspective.

Partners in Responsibility - Volkswagens Sustainability Information Management

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"Partners in responsibility" is the title of the new 2003/2004 environmental report from Volkswagen. Volkswagen's "Sustainability Partners" are important participants in the company's drive towards balanced sustainability management within the Group. The sustainability example set by Volkswagen reflects the integration of sustainable aspects in company strategy and defines a company policy oriented towards the long term. An important support tool in this respect is the guideline provided by the Global Reporting Initiative (GRI) and the Automotive Sector Supplement. In compiling the new environmental report, Volkswagen has followed the criteria provided by both these guidelines and is therefore in the lead in the car industry. Many of these indicators are described by a balanced characteristic data system. However, these characteristic data cannot simply be generated at the press of a button. They are brought together from many individual data items, the collection of which is based on the VW standard 98 000 (operational environmental characteristic data) which is binding throughout the company. All the above-mentioned

aspects combine to form Volkswagen's sustainability strategy and support information management within the Group.

EMA in the Consulting Practice – Recent Trends in Denmark

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In Denmark a number of measures have been taken to place more focus on the connection between environment and finance.
In a major project, UN's EMA framework has been tested by nine enterprises. This has created many perspectives as to how environment and finance are connected.
The new Danish Financial Statements Act, which came into force on 1 January 2002, includes requirements to major enterprises about disclosure of information on their environmental effects and environmental efforts to the extent that these have importance for the operations and financial development of the enterprise.
On the basis of PricewaterhouseCoopers' work regarding EMA and Environmental Shareholder Value examples are given on how the environment may be included in the enterprise's financial ratios such as economic profit, ROCE and EBITDA.

Workgroup EMA - Case Studies

5th March 2004, 10:30-12:00h
Chairperson: Christine Jasch

What does Sustainability mean for the Automobil Cluster Acstyria?

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The project comprises the definition of sustainability requirements, qualification requirements, implementation and developing a sustainability report for the cluster emphasising the monetarisation of the effects of sustainable development to the degree possible.
A Project within the framework of the programme „Company of tomorrow" of the ministry of transport, innovation and technology.
This project aims to specify the requirements of sustainable development for the Styrian automobile cluster and their industrial partners.
With increasing globalisation, multinational businesses obtain more duties and responsibilities, especially concerning social and ethical aspects. Simultaneously, the pressure of the sustainability agenda is mounting. Recently there has been a substantial increase in mobility. Transportation is one of the fastest growing markets worldwide. Demands to shape this industry following sustainable criteria are increasing. At the same time, the automobile industry is experiencing a global change. The technology and sustainability requirements imposed on auto corporations and their suppliers are constantly growing. Among European pension funds and other investment funds, there are rising interests in the ethical and environmental performance of companies. All these factors cause sustainable reporting to be a priority among rating agencies. Sustainable development is comprised of three dimensions: environment, social, and economic. These three dimensions are not separate however, if there is to be a realisation of this type of development among companies. For companies to have an interest in sustainable development there needs to be an expected financial benefit.
The Triple Bottom Line approach usually lists the three dimensions individually. The Global Reporting Initiative, GRI, lists the indicators for the three dimensions, but also lists "integrated indicators" in an attempt to combine the single dimensions. They, however, do not give any instructions on how to do this. GRI differentiates between:

- Systemic indicators, which present the environmental performance of the company in relation to the macroeconomic effects, and
- Cross cutting indicators, which generate a relation between 2 sustainability dimensions.

Sustainable accounting aims to develop methods for these kinds of integrated approaches and implement them in pilot projects. In 10-one day workshops, 10 companies of the automobile cluster will participate in providing and evaluating their sustainability costs using a procedure that is based on the UN DSD method of environmental- and material flow cost accounting. Further companies can participate given that they pay.
The collected data will not be publicly disclosed, unless the company wants to integrate them in their sustainability reports. Two companies, Verbund AG and SCA Laakirchen, already provide information on their environmental costs, sustainability effects, and related research studies in their sustainability reports. The development of methods to account for existing social and environmental costs provides companies with an instrument that shows that these costs are vital factors in executive decision making. This allows companies to use sustainability measures to increase their company value resulting in securing the companies' future.Factors that result in business costs should also be evaluated with corresponding costs. However, the information is not always readily available. The gap between business costs

and macroeconomic costs is decreasing with the increased use of environmental tools as can be seen with the recent implementation of carbon trading. In collaboration with the participating companies, this project aims to develop valuation methods for the effects of sustainability in their value chain.
The companies will develop a comprehensive sustainability report of the cluster on the basis of the results of the workshops and the developed method of sustainability accounting. The goal is to present the entire cluster as a single entity in terms of their sustainability profile. The individual companies can then develop their own sustainability report based on the standardised format. Sustainability reports have become a substantial medium of communication. These are evaluated by rating agencies and other organisations. Every year, the Chamber of certified accountants of every European country, awards a prize to the best sustainability report. These then compete on the European level in the European Sustainability Reporting Award. Unfortunately, Austria has not produced any good examples yet. This project should enable the members of the automobile cluster to develop internationally comparable sustainability reports of highest quality, to be submitted to the Austrian Sustainability Reporting Award in September 2004. The most important results for further dissemination are:

- A sustainability report of the cluster or several reports of the participating companies.
- A publication with the methodological approach and the outline for sustainability reports in the automobile industry.

The Success of CT Implementation for Dairy Sector in Thailand

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In 2000 The Department of Industrial Works (DIW) prepared a Cleaner Technology (CT) Policy Plan to promote CT to Thai industrial sectors. Code of Practices (CoP) with CT criteria and options for selected industrial sectors were issued. Dissemination of CoP has been carried out continuously with the intent to introduce CT concepts to the Thai industry and subsequently to encourage them to implement CT. However, follow up activities showed that CT implementation did not reach the desired level, as industries did not effectively implement CT. An effective way to motivate industries to implement CT has been to organize a competition among them. The Dairy industry was selected by DIW as a pilot sector. In the competition, the performance of the participating industries was measured against four selected CT criteria i.e. milk loss, water, electricity and fuel consumption, before and after CT implementation. The factory identified with the best performance and improvements was rewarded and promoted through various media.
Results showed that all factories did benefit from this competition by implementing different CT options with saving up to 1,400,000 baht per year (approx. 30,000 USD). Besides the potential economic benefits, reward and recognition as an environmental-friendly industry, the competition motivated other factories within the dairy industry to implement CT.
The success of this CT competition indicates that active interaction by Government organizations and close cooperation with industries can lead to successful CT implementation. Furthermore, a study to use EPI (Environmental Performance Indicators) or EMA (Environmental Management Accounting) to improve industrial process is also under consideration.

Directing Organizational Behaviour towards Sustainability through Environmental Management Accounting (EMA). A Case Study at a Coca-Cola Manufacturing Plant in the Philippines

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Winter and Steger (1998) provide a useful model on the communication processes of organizational learning motivated by environmental stewardship. They identify thirteen (13) learning instruments through which knowledge can be a catalyst for changing organizational behaviour towards sustainability. One learning instrument is what we term Environmental Management Accounting (EMA).
EMA is the identification, collection, analysis and internal reporting of environmental related costs and expenditures of an organization. This paper will illustrate the process and the results of setting up an EMA information system at a Coca Cola manufacturing plant in the Philippines. Designed to be a regular feature of the plant's total quality system, EMA is used to identify opportunities for reducing pollution and waste using a waste management hierarchy in which source reduction and recycling are the main components. Cost, savings, and revenue data related to environmental improvements and programs help managers and operational and administrative personnel make waste reduction and resource productivity an integral part of their duties and responsibilities. Tailored EMA guidelines are also developed to serve as a model for the implementation of EMA in other Coca-Cola bottling plants in the Philippines for the purpose of enhancing the company's benchmarking and evaluation activities.

Case Study: REA at Toshiba

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The Wuppertal Institute developed the concept of Resource-Efficiency Accounting (REA). The core thesis of this concept is: For exploring all ecologically sound cost reduction potentials within a company, economic and ecological aspects have to be considered simultaneously and life-cycle-wide. Therefore an information tool is needed. An information tool that delivers concise results and at the same time minimizes the enquiry expense. The objective of REA is to generate application-oriented Indicators for long-term management decisions. The data required for an ecological evaluation is based on Material-Intensity-Analyses. Thus, products, services and infrastructure are compared on the basis of their life cycle wide material input per service. This data is combined with economical information from the cost accounting and Enterprise Resource Planning (ERP) Systems. Due to the amount of data – especially in companies with many different supply chains in several countries – resource efficiency accounting requires IT systems for operational realisation. Hence, an adequate IT system was developed by the Fraunhofer Institute for Industrial Engineering IAO. The approach of REA was applied and adapted in a case study at Toshiba Europe Operations (TRO) in 2002. At the TRO production site in Regensburg (Germany) computer-notebooks for the European market

are assembled, configured and tested. These processes generate considerable amounts of waste esp. packaging material. The REA approach is used at TRO for analysing and assessing financial (e.g. costs for labour and disposal) and environmental impacts (e.g. impacts of production, transport and disposal) resulting from the packaging materials.
The analysis and the assessment was realized by a software tool which is integrated into Toshiba's ERP-System. Considering all necessary and currently available information this procedure allowed the assessment of the environmental and financial performance of parts of TRO's production and its supply chain. Since the initial implementation remarkably improvements and optimisations were realised.

Workgroup Sustainability Accounting in Practice - Europe and America

5th March 2004, 10:30-12:00h
Chairperson: Carin Labuschagne

Introduction of the Environmental Management Accounting and Company Experiences in the Czech Republic

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The main reasons why enterprises use environmental management systems encompasses continuing interest in protecting the environment and attempts to maintain or improve their position in the market. The laws related to the environmental protection are becoming increasingly stringent and demand on the part of customers is changing in that they are willing to pay more for environmentally sound products and do not wish to bear the environmental responsibility of their suppliers. Council regulation (EEC) No. 1836/93 was adopted in the Czech Republic through Resolution of the Government in 1998. The EMAS Programme was updated on the basis of Regulation (EC) No 761/2001 of the European parliament and of the Council through Resolution of the Government in 2002. If an enterprise is attempting to implement EMAS II, then an essential part of the system consists in the obligation to establish and maintain procedures for monitoring of environmental financial flows in order to implement environmental management accounting. The enterprise must proceed according to the methodology published by the Ministry of the Environment. Especially information on costs expended for environmental protection and costs related to environmental damage is very important for determining the economic effects of the environmental behaviour of the enterprise. Identification of environmental costs is based on the balances of material and energy flows.
The University of Pardubice carried out a qualitative study of the state of preparedness of enterprises, registered in the EMAS Programme, to implement EMA. The main objective of the study was to determine the existing state of EMA implementation in selected enterprises and to identify problems that could arise in the enterprises in connection with requirements following from the Guideline. The study was carried out through personal interview in selected enterprises that were registered in the EMAS Register. The study yielded the following results. Environmental management accounting is conceived in a very narrow sense - as monitoring and reporting environmental costs. They consider information following from EMA to be beneficial especially to employees responsible for environmental protection in the enterprise. This information enables assessment of the efficiency of the environmental management system. The enterprises do not expect that it will be necessary to establish new records of materials, energy or waste substances to meet the requirements of the Guideline. The enterprises consider the classification of environmental costs in the Guideline to be useful. It corresponds with classification of the costs of quality, with which they have experience.
The study confirmed that implementation of EMA does not constitute a major problem for the enterprises. The implementation of EMA becomes the important step to sustainability on the level of enterprises in the Czech Republic. We hope that it will be not only a formal matter and enterprises will value the importance of information that can be obtained in the framework of the system, and this information will be employed to support the decision-making processes in the enterprise.

A Sustainable Cost Accounting (SCA) Methodology for Process Industry Projects in Developing Countries

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Decision-makers in the South African process industry have communicated the need to express all aspects of sustainable development into monetary terms. Especially where new developments are undertaken, the region-specific impacts (positive and negative) should be reflected in the financial evaluations of the projects. A framework of criteria is proposed to incorporate all aspects of sustainable development into the assessment process during project Life Cycle Management (LCM). The framework focuses strongly on aspects relevant to the operational initiatives of the process industry. The criteria consider the two life cycles that are fundamental to the managers (and decision-makers) in this sector during project LCM: the asset life cycle that is required to manufacture products, and the product life cycle from which income is derived. The economic criteria of the framework are centred on the internal financial feasibility of a project, whereas environmental criteria are concerned with the external impacts of the asset and product life cycles. The social criteria include both internal and external aspects that are influenced by operational initiatives in terms of Internal Human Resources, External Population, Stakeholder Participation, and Macro-Social Performance. A Sustainable Cost Accounting (SCA) methodology is introduced to translate the framework criteria (where possible) into monetary indicators. Existing methodologies are adapted for the economic and environmental criteria. The latter is based on methodologies from developed countries. In these cases price indexes and discounting rates are used to obtain monetary values throughout the life of the project. The monetary conversions of the social criteria are region-specific and consider the expenditures and contributions of a project to society over its life cycle. A case study in the South African context (to manufacture Gas-To-Liquid diesel) is used as basis for the discussion.

Comparison of Evaluations of Businesses in U.S., U.K. and Costa Rica

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Business evaluations are an important tool, both for improving the performance of the business towards sustainability and for market advantage. Too often however, the public is uninformed of what the results signify, and they are expensive and difficult for the business to perform for itself. The CEPOS (acronym for Community involvement, Employment conditions, Production process and Operational Sustainability) evaluation method provides flexibility in scoring to accommodate different business activities and efforts, while presenting textual details that can be publicly viewed for accountability. It is graphically presented for clarity and can be used as a comparison between businesses and for the same business over a

period of time. This method has been applied recently to a variety of small businesses in the U.S., U.K. and Costa Rica to determine variations in performance between countries. A comparison of these results and the business climate of each location is presented along with an overview of the method.

Applications of Eco-Efficiency Analysis to BASF Life-Cycle Management Practices

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Life Cycle Management involves activities that encompass the entire product life cycle, from concept development, to design and implementation, further to marketing, and finally end of life issues. The eco-efficiency analysis of BASF incorporates both economic and environmental aspects and leads to a comprehensive evaluation of products and processes over their entire life cycle.
This analysis can lead to better decisions with regard to product design, materials utilization, and capital investment.
BASF has conducted nearly 200 such analyses over the last 6 years, with a focus products and processes.
The presentation will summarize the main uses to date of eco-efficiency analysis for managerial and strategic decision-making purposes.

Workgroup Sustainability Reporting – Communication Theory and Driver

5th March 2004, 10:30-12:00h
Chairperson: Angela Franz-Balsen

Sustainability Reporting in the Light of Communication Theory and the Challenge of Professionalization

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Current practice of Sustainability Reporting is diverse and still on the upswing. Companies have passed the stage of "green" ecology reports and they address not merely the environmentally aware client, journalist or activist, but a broader public.
The growing standards towards environmental communication confront the authors of environmental/sustainability reports with high demands respecting systematics, reliability, credibility and completeness of information. The current professional debates focus on the development of guidelines and on quality assessment. Enquiries investigating votes for the content and form of the "best as possible" product are sprouting, numerous rankings and "Reporting Awards" underpin this trend. At this point of flourishing development in the field it seems important from a scientific point of view to provide a specific theoretical framework derived from communication theory in order to develop and secure quality.
In this context the question arises in how far the communicators in the new "sustainability centres" of companies or PR agencies are well prepared for the rising standards of reporting. Shouldn't training programs be offered as soon as possible? To this day not a single study programme is known neither in Germany nor elsewhere that specifically aims at qualifying future sustainability communicators. But what we do need are unconventional thinking multitalents that manage to combine the complex content of sustainability with high standards in terms of communication in media conform ways.

Just a paper tiger?- The effectiveness of sustainability reporting as a communication instrument

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Sustainability reporting is considered nowadays by companies as a special communication instrument with their stakeholders with the purpose to build company's image and create a better relationship between them. Before one speaks about the advantages of sustainability reporting for a company, one should first know about the effectiveness of the sustainability report used as a communication instrument.
The aim of the study is to explore the communication effectiveness of sustainability reports. Case studies at the Deutsche Telecom AG and the Weleda AG, two German companies which have produced sustainability report regularly, have been conducted. First, interviews were accomplished with the company managers with the goal to investigate what kind of communication effects do they want to achieve through their sustainability report. Afterwards, internal and external stakeholders were also interviewed to find out whether the

goals of sustainability reporting as had been defined by the company managers were achieved. These interviews pictured the stakeholders' acceptance of the sustainability report and also their perception and behavior towards the company after reading the company's sustainability report.
First results indicated that the effectiveness of sustainability reporting as a communication instrument is not only related with the contents of the report itself, but also with different aspects of business environment. In other words, with criteria that can not be directly influenced by the company.

Drivers for Corporate Social Responsibility (CSR) Reporting

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This paper will outline and discuss some of the challenges and obstacles in relation to CSR reporting, with main focus on reporting on social issues. The paper hypothesis is that reporting on social and environmental performance in an organisation will create a momentum for improved total responsibility if the organisation is driven by an inner motivation to enhance the performance.
Many companies see their work with CSR reporting as a part of their overall communication plan and strategy. CSR reporting has become a part of branding the company. It is perceived as good PR to be known as a social responsible company. In our work we will look at different drivers for CSR reporting and one important driver has been this *front-door driver*. By front-door driver we mean that the main motivation for producing a CSR report is to show customers and other stakeholders that the company is behaving ethically and responsibly so that the stakeholders feel that they can rely on the company and identify themselves with the company's values. Ideally the reporting is the visible result of long time serious working with CSR in the company.In this paper we will look more closely on another driver for CSR reporting; the *In-door driver*. By In-door driver we mean that on the contrary to showing the stakeholders proofs of excellent performance, you are more concerned about your internal processes. The focus is on obtaining internal control of processes and performance in order to manage the company responsibly. With the in-door driver the goal is not necessarily to publish an external report, but to provide the management with al the important information on how the company is performing with regard to CSR. CSR reporting is then a management tool and the external reporting will also be part of the process rather than the objective in itself.The last driver we will mention is the *back-door driver*. The back-door driver represents the more or less well specified requirements from financial institutions and the authorities that the companies to a certain extent have to comply with. Financial institutions' interest in CSR can be related to stock exchanges and (sustainability) indexes. They are also beginning to take into account companies' ability to demonstrate low risk factor in the social/ethical sphere, when discussing economical liability and financial loans. The paper is based on a research project that aims at investigating how CSR reporting best can be performed while being motivated by the in-door driver. The project will follow a case company through the different phases of managing CSR reporting.

Workgroup Social Aspects of Sustainability Accounting and Reporting

5th March 2004, 13:30-15:00h
Chairperson: Francesco Zingales

Social auditing and accounting as part and basis of social management systems (SMS)

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In tackling social impacts, companies generally display a dearth of methodical approaches. Such approaches have to be developed in collaboration (applied research) in order to produce a set of management instruments – a so called "social management system" (SMS). These instruments will enable companies to assess and manage their social impacts both effectively and efficiently.
The feasibility study - social management systems SMS
The basic outline of an SMS was developed in a feasibility study and its potential for implementation positively assessed. The study was undertaken in close collaboration with a strategy group consist-ing of 20 companiesand organisations. The basic model of an SMS can be integrated into existing management systems, and is suitable for all types of companies. It helps them define the issues for the management of their social impacts. The model supports the normative, strategic and operative levels of management with a selection of adequate tools (supporting elements). By explicitly supporting consistent implementation, an SMS focuses the attention of managers on the systematic and continual pursuit of the social dimension. This increases both the credibility and the trustworthiness of a company. The system also promotes measures of communication and reporting. Qualitative assessments of cost-benefit scenarios show posi-tive results of an SMS in the long run. And, finally, the model contributes a positive input in the area of risk management.
However, there is a clear lack in methodology when it comes to integrating the social impacts into normative, strategic and operative management levels. Therefore a framework of methods has been proposed including tools for analysis, controlling, risk management and reporting. These tools are now to be developed.

Regulating Business via Multistakeholder Initiatives: A Preliminary Asessment of Corporate Sustainability and Reporting

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Since the 1980s, there has been a considerable shift in thinking regarding how to improve the social and environmental performance of transnational Corporations. An earlier emphasis on governmental regulation ceded ground to "Corporate self regulation" and voluntary

initiatives. This voluntary approach has evolved in recent years and assumed new institutional forms, which attempt to overcome some of the limitations of company codes of conduct and other self-regulatory initiatives in Nigeria. The latest shift in approach involves the emergence of so-called "multistakeholder initiatives" when NGOs, multilateral and other orgainsations encourage companies to participate in schemes that set social and environmental standards, monitor compliance, promote social and environmental reporting and auditing. Certify good practice, and encourage stakeholder dialogue and "Social learning."
This paper seeks to examine why multistakeholder initiatives have emerged as one of the dominant regulatory approaches in recent years. It clarifies their purpose and role, identifies some of their strengths and weakness and concludes by questioning whether such approaches are likely to significantly advance the agenda of Corporate Social Responsibility (CSR).
It is argued that such forms of "Civil regulation" emerged partly in response to the growing awareness that codes of conduct that were unilaterally designed and implemented by companies tended to be weak and often aimed more at public relations then substantial improvements in social and environment performance.
Multistakeholder initiatives have attempted to address some of the major weakness of codes of conduct associated with Corporate Self regulation, notably aspect dealing with labour right, the responsibilities of suppliers in commodity chains Controlled by Trans National Corporations (TNCs), and the need for independent monitoring. Some initiatives also aim to impose a degree of harmonization and standardization on what had become a confusing web of codes of conduct.
Given the complexity of multistakeholder initiatives associated with reporting, auditing, monitoring and certification, and the difficulty of scaling up such activities, other alternatives also need to be considered. The paper stresses the importance of procedures and institutions to detect breaches of agreed standards. Such "Complaints-based systems" can assume numerous institutional forms involving, for example, Judicial and parliamentary procedures, global collective agreements between TNCs and trade Union and NGO watchdog bodies that attempt to "Name and Shame" companies in relation to specific abuses.
Conclusion
Development in the area of international regulation should avoid the implicit northern bias and top-down character associated with certain initiatives to promote CRS. They need to be more Cognizant of developing Country realities and based on consultative processes that include labour and Southern actors as key participants. They also need to address the fact that global trade and policy regimes often restrict, rather than facilitate, the ability of developing countries to comply with higher labour and environmental standards.

Towards a Monetised Triple Bottom Line for an Alcohol Producer: Using Stakeholder Dialogue to Negotiate a Licence to Operate by Constructing an Account of Social Performance

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Forum for the Future has been working in partnership with an alcohol producer, "AlcCo", in its aim of making sustainable development possible by being a model of a sustainable business. With AlcCo, the social and environmental accounts are each composed of a monetary valuation of externalities and the shadow costs of avoiding or restoring that externality.
For the environmental accounts the shadow was derived by identifying the gap between current and sustainable environmental performance and the present market price of closing that gap; the externalities using public information.

The social dimension was constructed through wide stakeholder engagement which used publicly-available valuations to construct a social externality that they believed the company was responsible for and the how much it would cost the company to begin avoiding or restoring this damage. Work is continuing on a sector-wide approach so that the alcohol industry and the government can step out of the cycle of promoting the place of alcohol in society only to service the consequential misuse.
The stakeholder engagement is a source of feedback for AlcCo and validity for the approach. It is allowing AlcCo to negotiate a new role in contributing to a sustainable society.

Balanced Scorecard & Sustainability: Revisiting BSC Framework and Process to blend Environmental and Social issues with Financial Control

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Companies have historically preferred financial indicators to design and monitor their strategies. However such indicators tend to have a retrospective character, giving little insight to managers on where they should take corrective action. The Balanced Scorecard (BSC) approach was developed in the early 1990s to address this problem by providing a framework to establish causal relationships between sets of qualitative indicators and the financial bottom line. More recently, BSC has been proposed to include the management of environmental and social issues by firms, and provide a way of integrating these practices into its core strategy. This paper discusses a revision of both the BSC Framework and the BSC Process and discusses the environmental and social integration results of its application in a 2 yearlong participant observation effort with 2 different firms. Finally integration-definition and integration process variables are distilled and implications for scholars and practitioners discussed.

Workgroup Sustainability Accounting in Practice - Asia

5th March 2004, 13:30-15:00h
Chairperson: Nobuyuki Miyazaki

Green Budget Matrix Model Theory and Cases of Japanese Corporations

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Environmental Accounting Practices in Japan has promoted by two Japanese government ministries' initiatives, Ministry of Environment (MOE) and Ministry of Economy, Trade and Industry (METI). For METI initiative, its main objective is to promote Environmental Management Accounting (EMA) practices in Japanese corporations. This paper is one of the outcomes from active discussion in the Working Group for Environmental Cost Management, supported by METI. The purpose of this presentation is to introduce environmental budgeting tool for internal cost management. Firstly, we examine the necessity of budgeting integrated environmental concerns in corporations, and then survey some former studies about environmental budgeting and quality cost accounting methods. Finally, our method for environmental budgeting, the Green Budget Matrix Model, will be introduced with two Japanese corporations experiences.

Environmental Accounting Research and Practice in China: Current Status and Future

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Environmental issues are becoming the hot topic nowadays in China along with the implementation of the sustainability development policy. Both governmental sectors and other information users such as investors, creditors, the publics are becoming more and more interested in the information about a company's environmental effects and environmental performance. This paper includes two parts. In the first part, the author reviewed the current status of environmental accounting research and practice in China according to the previous surveys. In the second part ,the author proposed the future direction and steps to be taken to improve the current status of environmental accounting research and practices in China.

Recent Development of Ecological and Eco-Efficiency Accounting in Japan

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In recent years, apart from the practical development of environmentally differentiated (financial) accounting, physically oriented ecological and eco-efficiency accounting have made a rapid advance in Japan, with quite a few Japanese large companies preparing environmental reports with their own eco-indicator and eco-efficiency figures.
Most significant trend in it is that with the publication of JEPIX (Japan Environmental Policy Priorities Index, 2003) by Japan Science and Technology Inc./ Japan Sustainable Management Forum/ Japan Sustainable Management Rating Institute, ecological accounting (EcoBalances) with the complete set of >>single unit<< Eco-factors: EP (Eco-point) for about 500 environmental impacts based on swiss eco-scarcity concept is by now made available, so as to make the EcoBalance figures in environmental reports really comparable between many companies (factories, processes, products) and also periods, just like in the case of annual financial reporting.
Now, JEPIX Forum action group of 12 leading companies including TEPCO and Canon have been organized, and the introduction of the newly developed double-entry bookkeeping system for environmental impact ("Environmental Bookkeeping") is also being tested.

Economic value added accounting model

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In India, the traditional business world has leveraged in favour of adopting accounting concept to gauge the depth of business performance and position. To evaluate the performance during an accounting period, costs are matched against revenues. Simultaneously, balance sheet is also weighed to assess the present health of the business, while little emphasis is given for business optimization model and its futuristic growth trends. However, the business corporates of globalized India have started experiencing the increasing benefits of modern Economic Value Added (EVA) model of accounting. The new model includes sustainability and social issues into conventional methods of accounting. The learning in mentoring mode from MNCs while working with them and encouragement from Institute of Chartered Accountants of India, the model is gaining gradual popularity.
The proposed research paper attempts to contrast the traditional and new model of accounting in context of developing countries with special reference to India. A step by step process is delineated as to show how the EVA may be effectively used in India for finding out the present value of the company for its stakeholders and ensure organizational sustainability. Prior to pen down, certain suggestions are made to strengthen the EVA accounting model and the manner is discussed in which the EVA can contribute significantly for futuristic planning of the organization.

Workgroup Web-/ Internetbased Sustainability Reporting

5th March 2004, 13:30-15:00h
Chairpersons: Ralf Isenmann, Kicheol Kim

Web-based Environmental Management Systems for SMEs - Enhancing the Diffusion of Environmental Management in the Transportation Sector

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Engaging Small and Medium-sized Enterprises (SMEs) in environmental improvement is vital because they constitute the majority of companies, and taken as a whole, they have the biggest environmental impact in the industry. However, their size, structure and low awareness of the benefits that can be gained from environmental management increase their lack of resources to implement and maintain a formal environmental management system (EMS). SMEs need user-friendly solutions to facilitate decision-making, understanding of environmental management and evaluation of environmental performance.
EcoTra is an industry-specific web-based tool based on a model of transportation companies and enables users to measure, monitor and report their environmental performance and costs. Vehicles' air emissions, energy consumption and operational costs are monitored, and the energy efficiency and evolution of the CO_2-intensity for each client, vehicle or the entire fleet of the company can be reported internally, to the customers or to other stakeholders. These results and indicators can only be used as an environmental decision-making aid if the user thoroughly understands them. Therefore, the calculation tool is combined with a training system so that managers can develop their environmental skills and consider environmental issues as a part of the decision-making process. By using EcoTra, organisations enter a cycle of continual improvement while they consider their significant environmental aspects as defined in ISO 14001 and measure their environmental performance. The tool is developed in co-operation with transportation SMEs in three different European countries.
EcoTra answers the specific needs of SMEs by overcoming obstacles of awareness, resources and knowledge; the diffusion of environmental management will be enhanced by the development of similar sector-specific tools.

Internet-based Sustainability Reporting – Framework and Implementation

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In corporate environmental reporting, greater internet use, company reports available on the world wide web and movements towards a more balanced reporting approach, perhaps according to the tripple bottom line, have become the most noticeable topics since the inception of the field in the late 1980's and early 1990's. These different trends seem to be converging to push the field towards *sustainability reporting* that is based on the internet as a backbone for companies' underlying ICT-infrastructure.

In contrast to its intuitive appeal however, the practical approach of this advanced and more sophisticated reporting stage remains rather unclear yet, and in particular the role of the *internet* as new reporting medium needs to be made more transparent.
In this contribution, a *framework* for internet-based sustainability reporting is proposed, intended to moving away from early environmental reporting stages towards an advanced one that provides a set of customized contents, media, stylesheets and distributing principles, while fully exploiting the media-specific capabilities the internet and its associated technologies and services offer. This path is illustrated to progress in reporting along three dimensions:

- first, exceeding the free-standing nature of reports when disclosing exclusively environmental issues towards an *integrated* reporting system that comprises also crucial interrelations with financial and social issues;
- second, transcending the narrow focus of producing reports predominantly on print media towards a *cross media* reporting system that makes reports available on different media, in various presentation styles and a number of devices;
- third, fine tuning reports which are so far prepared as "one size fits all" universal publication towards a *customised* reporting system that provides tailored, individualised or even personalised reports on demand while truly meeting different information needs of target groups and preferences of other stakeholders.

When employing such an *internet-based sustainability reporting system*, it is argued here, the company will be in a position to carry out its tasks of information management well, using its human and organisational resources more efficiently, and communicating on environmental and sustainability issues in a meaningful way.
The internet facilitates sustainability reporting internally and externally, to the benefit of all groups involved in or affected by the field, be they managers, accountants, employees, key target groups and other stakeholders like members of the financial community, standard setting institutions and organisations focused on benchmarking, rating and ranking.
In order to put the framework into practice, a generic *ICT-architecture* is presented and then its *implementation* is described in a more detailed fashion. At present, this internet-based sustainability reporting system is realized as a prototype, but soon it will be implemented in a number of German small and medium sized companies (SMEs) that may be regarded as pioneers in the field, at least regarding customisation, providing individualised reports and using the internet properly.

Interactive Sustainability Reporting - Target Group Tailoring and Stakeholder Dialogue

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The cutting edge approach in the rapidly developing field of corporate communication seems to be *sustainability reporting*. Despite considerable progress companies have made since the last few years, there is evidence of a deficiency regarding interactive way of reporting to fully meet stakeholders' needs.
Consistent with a number of analyses and empirical findings carried out, mostly it is a clear *target group tailoring* and a *stakeholder dialogue* that is lacking in the direction of interactive

sustainability reporting. This is true for sustainability reports on *print media* and on *computer-based media* as well. Of the majority of reports usually a variety of target groups is addressed, but their information needs and other preferences are rather heterogeneous and thus these requirements cannot be fully satisfied or easily be met just by "business as usual" via one universal publication without providing stakeholder dialogue (on print or even computer-based media).

In this contribution, we present a developing path of how to progress in corporate sustainability reporting in terms of target group tailoring and stakeholder dialogue. This path is illustrated along four parts:

- First, target group tailoring and stakeholder dialogue are identified as *major challenges* in the field of interactive sustainability reporting.
- Then, a number of *empirical analyses* and *current studies* on sustainability reports are reviewed, be they available in print media or computer based media, with a special focus on target group tailoring and stakeholder dialogue.
- Based on empirical findings mentioned above, we propose a *framework* on how to improve sustainability reporting in terms of target group tailoring and stakeholder dialogue.
- Finally, we give an outline of a *practical approach* how to provide target group tailored reports and other honed communicating vehicles while offering instruments for stakeholder dialogue.

When employing sustainability reporting featured with a clear idea of target group tailoring and stakeholder dialogue, it is argued here, the company will be in a position to communicate on sustainability issues in a meaningful way, finally to the benefit of all groups involved in or affected by the field, be they managers, accountants, employees, and other stakeholders like members of the financial community, standard setting institutions and organisations focused on benchmarking, rating and ranking.

Workgroup Limits and Problems of Sustainability Accounting

5th March 2004, 15:30-17:00h
Chairperson: Pall Rikhardsson

Quality of Physical Environmental Management Accounting (PEMA) Information – Lessons from Pollutant Release and Transfer Registers (PRTRs)

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It has been claimed that in many cases the quality of pollutant release and transfer register information is hard for recipients to assess, thereby leading to poor-quality information driving out good-quality information (Schaltegger and Burritt 2000, p.334). In this paper an assessment of recent developments in a cohort of international countries is examined in order to establish whether the quality of pollutant release and transfer information has improved. The paper provides an overview of each PRTR system, comments on the usability of pollutant release and transfer information (based on a set of criteria including understandability, relevance, reliability and comparability), examines data measurement processes and reveals several data quality problems still needing to be addressed. Developments in Australia, Canada, Japan, the Netherlands, the UK and the USA are examined and conclusions drawn about the future for PRTR physical environmental management accounting information, including the potential for linkage of PRTR data with material flow cost accounting.

The Triple Bottom Line: Hot Air or the Face of Sustainability Management Accounting?

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Lately the concept of the Triple Bottom Line (TBL) has been launched as a framework for sustainability reporting. Based on writings of e.g. John Elkington and guidelines from the Global Reporting Initiative the TBL focuses on measuring and communicating corporate economic, environmental and social performance.
More and more companies are using the TBL as a framework for their external reporting initiatives. One might also assume that to be able to capture the information needed to construct a TBL reporting framework, there is a need for an accounting information system, which registers, stores and retrieves information for use in this process. As such the TBL could be an important step towards sustainability reporting as well as a sustainability management accounting system.
But looking back in time why are we to believe that the triple bottom-line and sustainability reporting has a better chance of success that earlier attempts at developing similar frameworks? Why are we to expect that TBL is anything more than – in the words of Richard

Welford - corporate hijacking of sustainability aiming at defusing and reinterpreting sustainability in a way that is non-threatening to business as usual?
The paper describes and critically discusses the TBL concept and compares it to earlier attempts at developing frameworks for sustainability accounting and reporting. It also attempts to link the TBL concept, which is primarily externally focused, to management accounting, which is internally focused – and in the process draws the contours of what sustainability management accounting might include.

Changing Corporate Policies and its Impact on Assessment Techniques

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In this article the authors analyze the changing needs for management information as a result of the rise of Corporate Social Responsibility (CSR). The concept of CSR urges companies not to focus on economic and financial value in an isolated way, but to assess their value added (or destroyed) across environmental, social and financial dimension. Ideally, those impacts should be incorporated into business decisions to able managers to steer on added value of corporate social performance (CSP). However, this paper argues that when CSR is shaped, changes in the normative notions occur and the use of valuation and investment assessment techniques is problematic. With respect to accounting for CSP measurement different approaches can be used, depending on the purpose and content of the method. The article presents results of two case studies in the energy and water market. The studies analyze how management deals with internal and external institutional changes and if regular accounting systems can provide the data needed to value the CSP related activities. On the basis of these case studies a mismatch is identified between the practical use of valuation and investment assessment techniques and the normative notions of top management. Finally, to overcome this mismatch, the role of the balance score card is discussed to overcome some of the discussed problems in management accounting.

Sustainability Accounting in Practice - South East Asia

5th March 2004, 15:30-17:00h
Chairpersons: Tobias Viere, Christian Herzig

Economic and Environmental Information in Productivity Improvement of Sea Food Industry in Thailand

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Seafood industry is one of a most important industrial sector in Thailand. Amount of seafood export is about 3-4.5 billion US$ during the period of 1993-1999 or equivalent to 62% of total food industry export. With new era of international trade, seafood sector in Thailand need to improve their productivity for survival in the international competitiveness. Both economic and environmental information are not sufficient collected by most of SME in Thailand. Without adequate information, efficient process and operation could not be performed. And this will affect productivity improvement in most SME. In order to obtain both economic and environmental information, lots of afford in terms of time, personnel and money will be needed. Green Productivity (GP) is one of the tools that could be used for productivity improvement. The basic concept of Green Productivity is built around prevention of wastes and emissions at the point of generation. With proper designed monitoring program, adequate information could be collected. Productivity improvement could be obtained through problems and root causes analysis of obtained information.
Three seafood factories were selected for GP implementation. Products of the factories are frozen shrimp, squid and processed fish for exporting. Major common problems of this sector are mainly high water and energy consumption, and also high consumption of ice during processing. Implementation of GP could start from information collection from the plant scale. At this stage certain problems could be identified. By prioritizing the problem areas, detail information on some process and some machine levels were monitored. After root cause analysis, options for improvement were suggested. About 40 options of improvement were proposed for the three selected factories. At the end of our project about 10 options were successfully implemented. A good example of improvement of ice making machine in one of he factory, could reduce electricity cost of the factory for up to 100,000 Baht per month or about 8% of total electricity cost. Ice consumption was reduced from 5kg of ice to 1kg of finished product to 2kg of ice to 1kg of finished product. More details of GP implementation and results will be presented.

Environmental Management Accounting. Currently and Future in Sustainable Development Strategy in Viet Nam

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In 2003 it was decided, to stimulate the debate, that a consortium involving Department of Science, Technology and Environment (DOSTE) in Hanoi, Viet Nam, and the Institute for Environmental Science and Technology (INEST) under Hanoi University of Technology (HUT) would fund and administer the development of pilot studies. These pilot studies would explore the introduction of environmental management accounting systems for SME in Ha Noi, Viet Nam and proposal project's duration is 2 years (2004 – 2005).
Pilot study goal: Application of Environmental Management Accounting (EMA) for Viet Nam Small and Medium Enterprises (SME) in industry sector to promote sustainable business. This study is to promote improved practices and reform in management accounting so that organisations are able to improve profitability by reducing costs, whilst achieving better environmental outcomes. This objective was to be achieved by undertaking practical case studies that show the benefits from, and to provide practical 'how to' examples of, environmental management accounting within organisations operating of SME within Viet Nam industry sector. The use of environmental management accounting overseas is increasingly being documented, and the sponsoring organisations were keen to facilitate development of this field within Viet Nam industry sector.
The primary content of pilot study includes:

- Survey and inventory for environmental cost and pollution information data in 15-20 SME in industry sector.
- Assessment and Classification and selection of 4 -5 SME for case study in industry sector.
- Integrated analysis and modeling of EMA and Sustainable Business for SME in industry sector
- Methodology for environmental cost and benefit estimate for SME in industry sector
- Applied Principe and schedule of EMA for SME in industry sector: Cost Accounting and Investment Assessment.
- Implementation and dissemination of the 4-5 EMA case studies for SME in industry sector.
- Improving the Role of Government in promoting EMA for SME in industry sector
- Building policy framework for promote to transfer of know-how in the field EMA for SME in industry sector
- Building education and training program for strengthening of capacity and knowledge on EMA and Sustainable Business Strategy for SME in industry sector.

The case studies involved trialing environmental management accounting for 4-6 months within each organisation. This required the identification of environmental costs that could be captured within the management accounting system (which in itself lead to the development of what was considered to be an environmental management accounting system), and investigating how the information generated by the revised system can be applied to improve both financial, and environmental decision-making within the organisation.
This pilot study will promote environmental management accounting within Viet Nam as a practical tool for organisations to address the dual goals of improving environmental and financial performance. To achieve this, the report seeks:

- To explain what an environmental management accounting system can or might represent;
- To explain different approaches to defining and measuring environmental costs;
- To provide readers with insights into work that has been performed in the area of environmental management accounting;
- To demonstrate how an organisation can practically and feasibly implement an environmental management accounting system, by refining its existing management accounting systems;

- To highlight how consideration of environmental costs can lead to the identification of cost reduction and revenue raising opportunities; and
- To emphasise that improvements in the financial and environmental performance of an organisation can often occur with relatively modest modifications to existing management accounting systems.

This pilot study provides the results of the environmental management accounting case studies. The organisations of SME participating in this project were involved in. While the organisations of SME operated in quite different industries, there were many similarities in the deficiencies that were found within the respective accounting systems. There were also similarities in the suggestions made to improve the accounting systems, and in the 'lessons learned' from the various case studies for promote an international exchange on EMA among business, government, of experience and information on government policies and business strategies for improving the industrial sustainability, and sharing the best practices and proven EMA tools, demonstrate the business cases of environmental excellence in Viet Nam.

Environmental Management Accounting at MINEBA Group Companies in Thailand

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The President and CEO of Minebea Co., Ltd. was stunned and upset by the environmental performance of his company which evaluated by Keizai Shinbun Newspaper in the year 2002 and this was the starting point of applying Environmental Accounting in Minebea Group Companies .
In the beginning of 2001 Minebea Co; Ltd., Head Office which was the Holding Company of MINEBEA Group Companies was ranked 141 of 250 of the companies based on their environmental performance in Japan. After getting this message, Mr. Tsugio Yamamoto, The President and Chief Executive officer of Minebea Co., was upset so he formed a committee to study this matter. After the study, they found out that there were many factors, which caused the poor environmental rating performance such as:

1. No Environment Accounting System.
2. No publication of Environment information.
3. No information disclosure for the Environment.

Then the President set up the target to be among the top 50 by 2003. That is the starting point of Environmental Accounting in MINEBEA Group Companies over the world. Minebea Group Companies in Thailand is the one of the production sites of Minebea Co., Ltd. This company that vertically integrated production of ball bearings, small motors, PC keyboards and other products, accounts for 60% of the Minebea Group's production and is its largest mass production facility.
The presentation deals with MINEBEA'S Operations and Environmental Accounting in Thailand.

Dissemination of EMA in South-East Asia

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To support a wider dissemination of Environmental Management Accounting (EMA) in South-East Asia, InWEnt – Capacity Building International, Germany, is funding a project called "EMA-SEA - Environmental Management Accounting for small and medium-sized enterprises in South-East Asia". EMA-SEA addresses the implementation and dissemination of EMA tools in South-East Asian companies to promote sustainable business. In terms of content, the project focuses on the creation and continuous application of suitable EMA training materials and the transfer of know-how and skills in the field of EMA through training activities and company projects.
The paper describes a conceptual approach adopted for the dissemination of EMA in South-East Asia and its various training activities. It also explains the training approach suggested for the transfer of EMA skills and know-how, and illustrates the expected results of the project.

Workgroup Sustainability Reporting – Software Solutions

5th March 2004, 15:30-17:00h
Chairpersons: Andreas Moeller, Martina Prox

Sustainability Reporting - Software Solutions - Corporate Environmental Reporting based on a XML-DTD and XML-Schema

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Corporate environmental reporting using the Internet is a rapidly emerging and increasingly popular method. Despite considerable progress companies have made since the last years, exploitation of the whole range of benefits of this computer-based method is still in a premature stage, yet, especially in terms of automated production and customized provision of environmental reports. Employing the extensible mark-up language (XML) and using a harmonized document type definition (DTD) for these leading reporting vehicles offer an array of benefits, finally elevating Internet use beyond the status of a mere online distribution channel of electronic duplicates of hard copy reports. In this paper we present the harmonization of three XML-based DTDs that have been proposed for corporate environmental reports until now. On the basis of a harmonized XML-based DTD, companies are then in a position to provide a customized environmental reporting system, prepared by machine processing in an automated manner. Furthermore, as the major part of this paper, we will show how the harmonized DTD can be transformed into XML-Schema. The XML Schema offers a range of new features over the DTD like richer data types, booleans, numbers, dates and times, URIs, integers, decimal numbers, real number and intervals of time. In addition to these simple, predefined types, there are methods for creating other types and aggregate types. A content model defined by a DTD is "closed": it describes only what may appear in the content of the element. XML Schema admit two other possibilities: "open" and "refinable". These new features would significantly improve and simplify the generation process of environmental reports.

Software Solutions within SAP/R3 to realize Environmental Performance Indicators, Mass Balances and Self Defined Queries for Environmental Management and Sustainability Reporting

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Information and data on a company's environmental performance is one of the backbones of sustainability accounting and reporting. However it remains still difficult to gain the necessary data out of the existing information systems. Most of the ERP-Systems are not designed for environmental management purposes and therefore it is difficult to draw information according to environmental management needs. Furthermore other relevant information is not stored in the ERP-System but in other specific software tools. The paper will describe results from a pilot project within the research project INTUS[1] that provide a solution for a reporting tool using company data for different purposes of environmental management and accounting. The pilot project was conducted in cooperation with the German automotive supplier Continental. The reporting tool was realized for the following purposes:

- Environmental Balance and Reporting
- Analysis of environmentally relevant material consumption

The tool is based upon on the information system SAP/ R3 and ventures into new territory in organizational as well as in technical sense. Actual production data from different modules of SAP/ R3 is used for the compilation of environmental balances and detailed analysis of material consumption. That enables not only environmental management tasks like reporting, performance measurement and accounting at a single production site, but also for the complete Continental company group. Aspects of the methodological approach and its realization in organisational structures and information technology of the company Continental will be described in the paper.

Environmental Information Systems as a Link between Technical Experts und Managers

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Fifteen years ago Computer Integrated Manufacturing (CIM) was discussed as an integration concept for manufacturing companies. One concern was to overcome the gap between the technical and managerial perspective. Until now this problem is not really solved.

In the field of corporate sustainability the two views often remain unconnected too. In the perspective of the management we speak about environmental accounting, information instruments, and sustainability reporting, whereas engineers discuss production techniques, production simulations and process designs. It makes no sense to develop different software support for both groups of players. Rather on the basis of the representation of material and energy flows environmental information systems offer new possibilities to integrate the two points of view. Engineers use such a kind of software as modeling tool. The software system supports the technical design process. Concurrently the technical design process specifies important features and performance indicators of the subsequent implementation. Therefore this process is a relevant part of the corporate planning and control. The software system emerges as an environmental information system. As an information system the software has to fulfill additional requirements concerning decision support, based on for instance materials flow cost accounting and environmental performance measurements. However, it is essential not to lose the link to the engineers. The system has to support communication and coordination of the different players.
In the talk we would like to present and discuss requirements for such a system, possible approaches and designs.