EMAN-EU 2008 Conference

Sustainability and Corporate Responsibility Accounting - measuring and managing business benefits

PROCEEDINGS

Budapest, 2008

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Editors:
Mária Csutora
Zsuzsanna Marjainé Szerényi

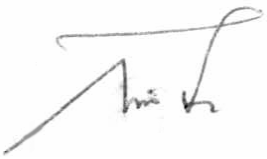
Greetings

Corvinus is the most highly reputed university in its various fields of involvement in Hungary. It defines itself as a research university, whose achievements are internationally-acknowledged. Our business administration program is one of the most attractive in terms of student enrolment and the future prospects of students on the labour market. Many faculty members and Corvinus alumni have achieved a high reputation and have taken leading positions in Hungarian business, social and political life. We strive to further expand our traditionally excellent cooperation with the business sector through joint research and development projects.

A sign of the international recognition of our educational and research activity is the fact that in November 1996 the University became a member of the CEMS (Community of European Management Schools). The Faculty of Business Administration is also a member of PIM, EDAMBA, EFMD and CEEMAN.

Corporations face new challenges in the era of climate change and increasing environmental regulation. Responding to these challenges, the curricula of the University capture a wide variety of environmental topics including corporate environmental management, environmental economics, environmental law, organic farming and more. Current students of business administration will shape future corporate culture, thus any subject that integrates sustainability issues into the business field is most welcome at our university. For this reason, Corvinus University is very pleased to host the XI. EMAN-EU conference. We wish all visiting participants a stimulating and successful time at Corvinus University..

Welcome to the 11th EMAN-EU Conference:



The Rector of the Corvinus University of Budapest

Director of the Institute for Environmental Science, Vice Rector

FOREWORD

The focus of corporate environmental policy is shifting from one-sided towards more integrative approaches; CSR and Sustainability reporting predominate over more narrowly-focused environmental reports in Europe. Similarly, environmental accounting should broaden its scope in order to address new challenges.

Are better sustainability and CSR performances clearly beneficial for companies, or do rather severe trade-offs result from improved environmental, social and economic performance? Shall we need a more differentiated approach, based on correctly measuring the costs and benefits of enhancing the position of sustainability? While environmental cost accounting already has a decades-long history, too little effort has as yet been dedicated towards benefit estimation, an area even more slippery than cost estimation. Benefits go far beyond cost reductions or revenue gained from recyclable waste, and knowing their approximate value in order to advise companies whether their increased sustainability efforts can pay back is critical.

The XI. conference of EMAN is therefore devoted towards measuring the benefits of CSR and Sustainability performance.

The Institute of Environmental Studies within the Corvinus University of Budapest accepted responsibility for organizing the XI. EMAN Conference 6-7 October, 2008 in Budapest, Hungary. It is the first time that an annual EMAN conference has been organized in a CEE country, but hopefully it will not be the last: environmental accounting is increasingly featured on the business curricula of the region.

In order to assure quality, all presentations went through a two-step peer review process. The scientific committee of the conference reviewed the initial abstracts, accepted or refused them and sent them back for revisions when it was necessary. The authors of accepted abstracts were requested to give a presentation on the conference and to submit an extended abstract to be included in these proceedings.

We would like to thank to all our partners and sponsors for supporting this event, with especial thanks going to the Hungarian Minister of Environment and Water who is the patron of the conference, and the MECENATURA fund for its financial support

Welcome to the 11th EMAN-EU conference

Maria Csutora
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Ágnes Zsóka

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Managing the Business Case for Sustainability

Stefan Schaltegger
Centre for Sustainability Management (CSM), Leuphana University Lueneburg,
Scharnhorststr. 1, D-21335 Lueneburg, Germany
E-mail: schaltegger@uni.leuphana.de

***Abstract*: The link between environmental and economic performance has been widely debated in the literature for the last fifteen years. Whereas in the beginning most of the debate was about whether a business case exists or not, research has shifted for the last couple of years towards the question what kind of links exist between voluntary environmental and social engagement and business success. Based on the findings of this second phase of research this paper goes a step further by asking how the management approach could be developed to identify, analyse and manage business cases for sustainability.**

I. INTRODUCTION

Corporate sustainability requires that management improves corporate economic performance through voluntary, proactive environmental and social activities [1]. It is, however, an illusion to believe that any kind of automatic relationship exists between voluntary societal activities and business success [2]. Theoretical and empirical research indicate that most companies seem to have potential for one or several business cases for sustainability [3]. However, this potential is often not recognized because of distorted accounting systems and other management information systems [4] [5]. Management is furthermore challenged to find approaches to realise the potential through adequate sustainability management. In other words, a business case for sustainability has to be created – it does not just happen [3] [6]. A further consequence is that the existence of a business case for sustainability cannot be identified by asking managers who believe in automatic relationship and/or who have not been able to create one.

A business case for sustainability, as a difference to just a conventional business case or a business case of sustainability, intends and realizes economic success through (not just with) an intelligent design of voluntary environmental and social management.

II. WHAT IS A BUSINESS CASE FOR SUSTAINABILITY?

A business case for sustainability is characterised by three requirements which have to be met. Firstly, the company has to realize a voluntary or mainly *voluntary activity with the intention to contribute to the solution of societal or environmental problems.* These are intended activities for the society or natural environment which are not just a reaction to legal enforcement or dominated by legal requirements or which would be expected for economic reasons as part of conventional business behaviour anyhow.

Secondly, the activity must *create a positive business effect* or effect on corporate success which can be measured or argued for in a convincing way. Such effects can be cost savings, the increase of sales or competitiveness, improved profitability or reputation, etc. The cause and effect relationship can be direct or indirect, however, must not be speculative but rather based on a sound business argumentation.

Thirdly, a clear and convincing argumentation must exist that a *certain management activity* has lead or will lead to both, the intended societal or environmental effect, and the economic or business effect. A business case for sustainability is characterised by creating economic success *through* (and not just along with) a certain environmental or social activity.

To create a business case for sustainability requires a good understanding of links between non-monetary social and environmental activities on the one hand and business or economic success on the other hand. A basic understanding of such links is sketched in section III. Furthermore, management needs a good information basis which supports the creation of a business case (section IV).

III. FRAMEWORK MODEL

To discuss and manage a business case for sustainability requires some understanding of the relationship between voluntary societal activities and corporate economic success. The influence of voluntary environmental and social activities on economic success or business success of a company can be discussed on basis of the model in Figure 1. Given a starting level of no voluntary activities the economic success (ES_0) can either be increased (line ES_0-A) or reduced (line ES_0-E-F-D) through voluntary social or environmental activities. Whereas reactionary people will maintain that any kind of voluntary activity outside the narrower focus of economic measures will reduce profit, modernist and innovative observers of business reality will find examples of profit increasing or business supporting measures.

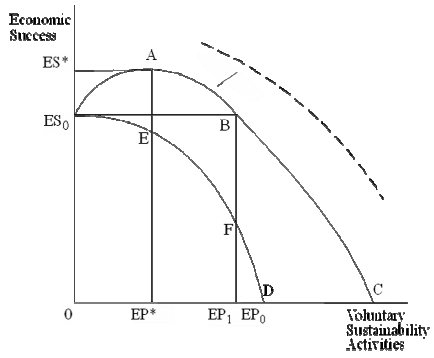

FIGURE 1: CREATING A BUSINESS CASE FOR SUSTAINABILITY [2].

Examples can of course be found for both effects, such as end-of-pipe measures creating costs and reducing profitability on one side, or the sales and success and profitability of green products in the nutrition industry on the other side. In any case, the function can in general be expected to slide, both, for the bottom cost curve with increasing costs per measure, as well as for the top success increasing line with diminishing returns on voluntary societal activities. Variations of the curve, for example with increasing steepness after some measures, are of course possible where recognition thresholds are exceeded and reputation is gained only after a certain number of realized activities.

One result of the conceptual discussion of the framework model is that there is no automatic of externally given, fixed relationship between societal engagement and economic success. With sustainability activities of SA*, either point E or A can be achieved, depending on whether cost-driving or profit-driving activities have been chosen and designed. In other words, there is no general answer to whether it pays to be green, but rather a management challenge to create societal engagement in a way that it contributes to business and economic success. It depends on what kind of measures is chosen. A business case for sustainability has to be created and managed – it does not just happen.

The fact that business case potentials are ofter overseen even by well informed corporate professionals and the necessity to identify and analyse business case potentials and to manage them in a structured way is maybe most apparent in production where Cleaner Production approaches have had difficulties to spread on a wide basis for the last decades even in companies with large cost saving potentials [6].

However, even if the most profitable measures are chosen, the success increasing curve will at some point have its culmination and slide because no company will have an unlimited number of profit increasing voluntary social or environmental activities. The core question and the basis for any management of a business case for sustainability is thus how profit increasing societal activities can be identified and managed. This is where managing a business case for sustainability links in with sustainability accounting and performance measurement. The first linking step between sustainability accounting and managing a business case is the discussion of drivers of a business case.

IV. DRIVERS OF A BUSINESS CASE AND ACCOUNTING REQUIREMENTS

The drivers of a business case for sustainability should drive economic success and therefore have to be related or equal to the drivers of a conventional business case. However, the links between voluntary sustainability activities and economic success are often different and therefore also the kind of influence a social or environmental activity has on the economic drivers. Among the core drivers of a business case for sustainability are:

- Costs, cost reduction and increase
- Sales and profit margin
- Risk, risk reduction and increase
- Reputation and brand value
- Influence on attractiveness as employer
- Innovation

All voluntary social and environmental projects and activities can be analysed in terms of their influence on these drivers. Furthermore, other drivers such as market entry or development can play an important role depending on the circumstances and the company´s strategy. An important issue which is often neglected when assessing the business or economic effect of societal activities is that their path of influence (or cause-and-effect link) can be quite indirect, involving non-market links and actors such as political initiatives, NGOs, etc. In addition, these relationships can be stochastic which makes the management more difficult.

The variety of possible relationships and the different character of sustainability issues make it necessary to firstly distinguish different decision situations and information requirements [4, 5] and, secondly, to develop an integrative approach to systematically and successfully create a business case for sustainability [7]. Integrative means that the approach should link performance measurement, information management and accounting, strategic management and reporting.

V. SUMMARY

A business case for sustainability is neither an automatic relationship between general activities or measures nor does it just happen – it has to be created actively through an intelligent sustainability management approach. This paper discusses an analytical model and drivers how to identify potentials to create a business case for sustainability

through adequate corporate sustainability management. To systematically create a business case requires adequate information management and accounting approaches as well as an integrative approach to bring strategic management, performance measurement, information management, and reporting together.

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Social Responsibility: The Developing ISO 26000 Standard

John Morelli
Rochester Institute of Technology, 78 Lomb Memorial Drive, Rochester, NY 14623-5603 USA
E-mail: john.morelli@rit.edu

Abstract: **This presentation will introduce the general intent, applicability, and approach taken by the International Organization for Standardization in developing the ISO 26000 guidance standard for social responsibility, define the term "social responsibility" as it is used in the standard; present the principles of social responsibility; and identify and discuss the core subjects covered by the standard.**

VI. Introduction

There is an increasing world-wide expectation that organizations will become more socially responsible and contribute toward improving the health and welfare of society and ensuring healthy eco-systems.More than ever before, social, socio-economic, and environmental influences are being considered in measuring and evaluating an organization's performance. Correspondingly, organizations are increasingly in need of an international standard to identify and define the parameters of social responsibility (SR) and to provide guidance in meeting generally accepted expectations.The International Organization for Standardization (ISO) is in the process of developing an international standard to provide guidance on the underlying principles of social responsibility and related issues, and directions on how to implement social responsibility within the organization. The standard will be applicable to all types and sizes of private-sector, civil-sector, and public-sector organizations, except for governmental organizations when exercising executive, legislative and judicial functions. It is intended for voluntary use and not as a specification for certification.

VII. A brief history of social responsibility

In classical Greece, the predominant mindset of society regarding the role of business was that it existed to serve the public. The moral standard of the businessman was expected to extend well beyond honesty. A common respect for nature was reflected in the mining and lumber industries as standards of environmental conservation were enforced upon them. Economists of the early nineteenth century believed that the ultimate goal of all economic activity was "happiness." While the pursuit of wealth was emphasized, it was understood that morals and social responsibilities should take precedent. By the turn of the century, however, this tie with "happiness" had been severed, precipitating a new school of thought which emphasized maximization of utility and profit as principal objectives.

Today, we appear to have come full circle and social responsibility is again expected from businesses as well as from other non-business organizations.

VIII. Characteristics of SR today

This concept of social responsibility has in the past been associated principally with businesses. The term "corporate social responsibility" is the most common expression of this concern. However, the concept of "social responsibility" as applicable to all organizations has recently emerged as a path forward. This is as a result of increased global networking and communication, the recognition of worldwide responsibility for combating poverty, international accords and collaborations, increased influence of the private sector, changing roles of government, growth of the civil sector, and increased scrutiny of activities and policies of all organizations.

The essence of social responsibility is the willingness of organizations to be accountable for the social, socio-economic and environmental impacts of their activities, products and services. It implies that organizations will operate with principled behavior, and act ethically and transparently in this regard, and recognize the universality of human rights.

IX. Core SR subject areas

ISO identifies seven core subject areas of SR. The ISO 26000 Standard provides guidance on the core subject areas, related issues, and on ways to implement SR.

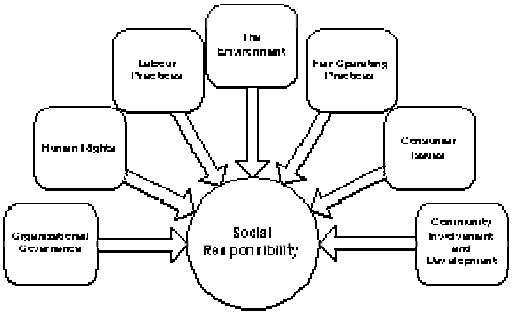

Figure 1: Seven Core Subject Areas of SR

The seven core subject areas of SR depicted in Figure 1 will be introduced and discussed in greater detail in the expanded paper and presentation.

X. Conclusion

The ISO 26000 presents a comprehensive view of social responsibility and will serve as useful guidance for organizations willing to step up to a higher level of performance.

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Limits to the Hungarian Sustainability Strategy

Sándor Kerekes
Corvinus University of Budapest, Fővám tér 8, Budapest, H-1093, Hungary
E-mail: sandor.kerekes@uni-corvinus.hu

I. CHANGING PRIORITIES

The priorities of sustainability policy are changing due to the following phenomena:

- Polluting industries left the developed world.
- Most of the environmental problems has been solved (cleaner production, waste minimization, eco-efficiency- profitable solutions.
- „Only" problem seems to be consumption and consumerism,
- Reporting shifted from environmental report through sustainability towards CSR report

I. C ONTRADICTIONS IN THE EUROPEAN DEVELOPMENT

There are several contradictions in the European development. Both the labour and the energy intensive sectors are living Europe. The knowledge society is not in place, but already almost no manufacturing in Europe.

There is no vision for coordinated European R&D, non of the EU members are able to invest the critical mass of money for research. The sustainability concept of EU is not focusing on consumption. The improvement in eco-efficiency is not sufficient. Stock economy should be replaced by flow economy.

Picture 1 shows two kinds of problems in sustainability: the easy ones (see first picture) and the difficult ones (see the second picture). Technology and hardware belong to the first category while social and institutional problems to the second one.

II. AN EASY PROBLEM: THE CASE OF WATER MANAGEMENT

The EU's unified environmental regulations are tools to protect the Union's integrated market: a move from subsidiarity to unifomity.

Dissimilar environmental standards in various members states may induce the flow of labour from regions with more stringent to regions applying less stringent regulations. Lax environmental standards provide a competitive advantage to business enterprises, this is unacceptable practice in EU. It has never been raised whether potentially harmful effects on competitiveness are less numerous than the adverse effects unified environmental regulations may cause.

In respect to requirements, EU Directives usually make no distinctions based on existing environmental conditions and vulnerabilities. (environmental federalism:Wallace OATES)

The EU's relevant regulation extends to the criteria of "service level" of the specific settlement category, as well as that of environmental sensitivity. The original Hungarian concept was developed in that spirit: until 2010, it requires different levels of canalisation for different settlement categories. It set the optimal national canalisation rate at 68 percent.

Once the canalisation project was launched, every mayor and self-government ignored these guidelines and developed plans for the highest possible rate of canalisation: laying sewage pipes and the acquisition of required funding present "excellent business opportunities" for prominent interest groups in the settlements.

As increasingly stringent environmental standards favour the creation of large systems, small communities will have to pay relatively more for public services (e.g., wastewater management and waste treatment) than members of large communities do. This results in welfare losses for the small villages:

- the level of comfort per household is in direct proportion to improved environmental conditions, the specific cost of purifying 1 cubic meter of water is in inverse proportion to the volume of the water to be treated.
- environmental cost/household expended in small communities exceed the value of increased comfort derived from the implementation of standardised norms.
- while in the past the income of the rural population was well below that in the cities, living costs were also significantly lower.
- The specific costs of smaller systems are higher than those of large systems enjoying economies of scale.

As consequence the public support of the environmental protection declined in Hungary

The implemented environmental protection measures had negative effects for the inhabitants. The eco taxes increased the prices, the utility costs increased due to the sewage pipeline construction, and the waste management.

The state of the environment has not changed rapidly, at least the changes are not visible. No real increase in life expectancy happened.

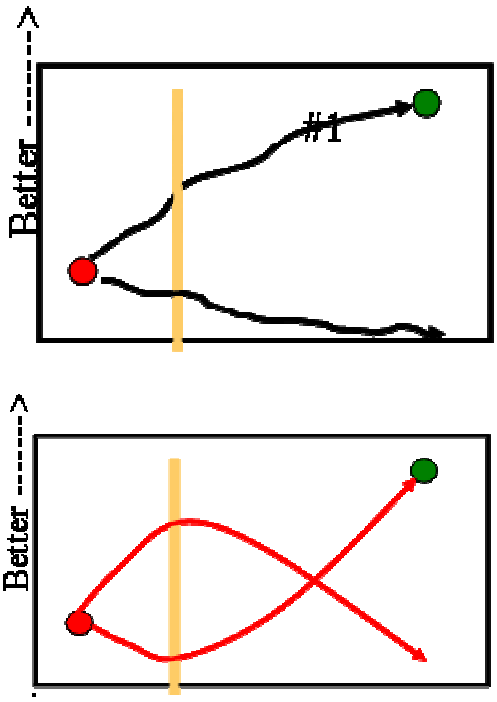
III. A DIFFICULT PROBLEM: THE CASE OF THE MISSING INSTITUTIONAL NETWORK

The monthly income per capita and the geographical distribution of the gipsy population follow a similar pattern in Hungary. Only 1 % of them has higher education and more than 70 % are unemployed.

Highly varied geographic, social and economic factors would suggest the wider application of the principle of regionalism. As regional disparities in environmental quality lead to social and economic inequalities, prudent area and urban planning could play a crucial role in the prevention and resolution of development problems.

If we consider the total economy of a settlement or region as a single industrial ecological system, quite different solutions and economies of scale obtain than would be offered by any respectable planner trying to resolve apparently isolated environmental and sustainability problems.

Smaller systems (in particular, those serving between 200 and 1000 inhabitants) would require fundamentally different approaches and solutions. These communities lack the necessary funds and the expertise to develop adequate solutions. They may have no choice but accept the commonly held economic principle that tightening environmental regulations favour the creation of increasingly large systems and small communities have to pay more for public utilities (3 to 10 times) than members of larger communities do.



Source: D. Meadows

PICTURE 1: TWO KINDS OF PROBLEMS IN SUSTAINABILITY

Estimating the monetary benefits of environmental management in DENSO corporation

Szilvia Gärtner. Antal Vizy
DENSO Manufacturing Hungary Ltd., Holland fasor 14., 8000. Székesfehérvár, Hungary
E-mail: sgartner@denso.hu

If we put the expression "environmental accounting" into a search program we get in 0,3 second more than 6 million hits. It shows that we are talking about an essentional issue. In my xase study/conference paper I show you how the DENSO Manufacturing Hungary Ltd. encountered this challenge.

Comparing with other DENSO subsidiaries DMHU fallowing the principles of the sustainable develpoment endeavors to harmonise the ecological and economical aspects of its activity. According to the environmental aproach the implementation of the ISO 14000 standard has been already started during the test production and after the official opening in November 1999 DMHU has got the cetrification.
To realize the continous improvement from 2000 onwards DMHU has carried out several environmetal measurements.

Measurement	Since when?	Environmental improvement	Investment Cost (annual) Saving (annual) Saving period
Installation of local lightning; optimizing of heating and cooling	2000-2001	20-25 % energy saving/product	13 MHUF 12MHUF 87MHUF 2,1 months
Timing switch to the lightning system in the cloakroom	2005	50% cost reduction 98000 kWh electricity reduction = by 38,66 t less CO_2 emission	350.000 HUF 0 HUF 1 MHUF 4 months
Recycling of compressor heat for warm water	2005	64700 m^3 gas reduction and less then 15,24 t CO_2 emission	2,1 MHUF 0 HUF 4,6 MHUF 5 months
Reuse of combustion gas of boilers for warm water	2005	63300 m^3 gas reduction and less then 14,9 t CO_2 emission	6,7 MHUF 0 HUF 4,5 MHUF 23 months
Recycling of non-hazardous waste	2000	Incomes from recycling	0 HUF 700.000 HUF 9,5 MHUF Immediately
Regeneration of Ferroclean (halogenic free solvents)	2000	Reusage of 45000 kg solvents; 75% reduction of new material purchasing	250.000 HUF 6,7 MHUF 15,7 MHUF 1,5 week
Recycling of oils	2001	Cost reduction by hazardous waste treatment	0 HUF 400.000 HUF 900.000 HUF Immediately
Zero emission for industrial waste	2002	<1% of waste will be landfilled	0 HUF 7,8 MHUF 28,2 MHUF Immediately

1. FIGURE: ENVIRONMENT AND COST SAVING

In 2005 DMHU started to review and systemize all of its environmental costs. The aim was on the one hand to show that these costs are a big part of the total expense on the other hand to explain that environmental protection whereas can be a tool to reduce some cost.

The first step was to identify and classify the costs, which seemed to be very easy:

1. Usual costs: waste management, waste water treatment, air protection
2. Hidden costs: administration cost, salary
3. Potentional costs:
4. Intangible costs
5. External costs

During the 6 month data collection period the we could complete only the first category. The second category is covered partially but the other 3 classes can be only estimated.

The next table shows the material balance of the usual costs:

Input	Output
Raw materials	Industrial waste/scrap
Auxiliary materials	Hazardous waste
Chemicals	
Used energy	Air pollution
Technology gases	
Water usage	Liquid waste
Packaging materials	Communal waste

2. FIGURE: MATERIAL BALANCE BASED COSTS

In the second step we combined the material balance data with the hidden costs and we created a summary report.

In my conference paper I would like to show how we could implement the environmental accounting into our exisiting accounting system.

Keywords: environmental accounting; environmental management system; zero emission; material balance; accounting system

Corporate Sustainability Reporting in Hungary – the Special Case of the ICT Sector

G. Zilahy, L. Kovács
Corvinus University of Budapest, 8 Fovam ter, 1093 Budapest, Hungary
E-mail: gyula.zilahy@uni-corvinus.hu

I. Advances in Corporate Sustainability Reporting

Corporate sustainability reports form an important tool to promote an open and democratic society and to involve citizens in decision-making processes as required by the renewed European Union Sustainable Development Strategy. The strategy document calls for the involvement and cooperation of businesses and other stakeholders in the efforts towards a sustainable future. Moreover, the rapid spread of the ideas and practices of Corporate Social Responsibility, especially in the developed countries, also stresses the importance of corporate communication in the field of environmental protection, social issues and economic development.

In Hungary, corporate sustainability reporting dates back to the mid 1990's when the first environmental reports were published by large manufacturing companies. These first reports were often initiated by the introduction of Environmental Management Systems and differ greatly with regard to their targeted audiences, scope and detail.

Government regulations did not, and still do not require public environmental reporting from the business sector, thus the requirement of external stakeholders and internal motivation of the companies are the most important factors to motivate companies to prepare such reports.

With the spread of the guidelines provided by the Global Reporting Initiative (GRI, 2003), both the content and form of corporate reports became more standard. At the same time there is an evident move from more simple environmental reports to sustainability or social responsibility reports and instead of a general, more qualitative description, companies try to provide stakeholders with concrete environmental, social and economic data.

However, these changes have not been accompanies by a sharp increase in the number of organisations publishing environmental/SD reports and still only about 30-40 Hungarian companies prepare such annual publications.

II. Measuring Sustainability Performance in the ICT Sector

The Information and Communication Technology sector (ICT) plays an increasing role in today's societies, let it be developed or third world counties. Every area of human life is increasingly relying on the telecommunication sector creating a strong demand 'pull', while rapid technological advances continuously 'push' new products and services to the market.

The European Union sees the ICT sector as a crucial factor in driving economic growth and in particular increasing productivity. But the Information Society and Media Directorate-General of the European Commission also foresees an important role for the sector in establishing a sustainable development pathway for the continent. Energy efficiency can be increased using state of the art ICT solutions [1], monitoring technologies can help reduce risks and prevent disasters and environmental data collection and dissemination can result in better planning and implementation and finally a healthier state of the environment.

The Environmental Charter of the European Telecommunications Network Operators' Association [2] also acknowledges the importance of Sustainable Development and draws up six tasks for its member organisations: to increase awareness of all – negative and positive – environmental impacts of operations; to achieve full compliance with regulations; to support research and development towards SD; to build environmental considerations into procurement processes; to provide information of relevant environmental data and finally to implement an Environmental Management System by all signatories.

At the same time, the ICT sector may also contribute to a non-sustainable development path. Not only its direct impacts (energy and water use, electric and electronic wastes, etc.), but perhaps even more importantly its indirect impacts (e.g. lifestyle changes resulting from the extensive use of telecommunication products and services) require close attention.

In the end, it is the balance of these potential negative and positive impacts of the industry that should be considered when regulatory decisions are made regarding its future development.

Measuring and reporting these complex impacts is often not a simple job (see for example [4]), as also indicated by the publication of a special industry supplement by the Global Reporting Initiative [3].

This article will provide an overview of corporate sustainability reporting practices in Hungary and will also try to uncover underlying tendencies and future courses of development. Next, the author will

discuss present day reporting practices in the Information and Communication Technology sector and will indicate some problems relating to these practices. Finally, suggestions will be provided to both corporate representatives and policy makers in order to be able to provide a more precise picture of the environmental and social performance of today's ICT companies.

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Accounting for Sustainability

Paul Druckman, Chairman, FEE Sustainability Policy Group

I. KEYNOTE OUTLINE

Title: Accounting for Sustainability
Synopsis:

- The accounting profession has a significant role to play in the development of embedding sustainability into business processes. How is the profession approaching these challenges and what are the European initiatives that will contribute?
- Is there a need for a "Connected Reporting Framework" to enable companies and other organisations to report key sustainability information alongside more conventional financial information, so that a more rounded and balanced picture of the organisation's performance is given? Such a framework could explain how all areas of organisational performance can be presented in a connected way, reflecting the organisation's strategy and the way it is managed.

II. PAUL DRUCKMAN FCA

After a highly successful business career as an entrepreneur in the technology sector, Paul now splits his time between operating as a non-executive Chairman and Director of businesses and organisations ranging from the world of software to business support, and working on influencing the accounting community on sustainability matters.

The high profile work on sustainability matters has been within the accounting profession, as President of the Institute of Chartered Accountants in England & Wales (2004/5); working with the Prince of Wales; and with the European profession. Since 2004 working within the Prince of Wales project on accounting for sustainability, he has taken over as Chair of Board for the Prince's project, which in future will have significant participation internationally and from the accountancy profession. Chairman of the Sustainability Policy Group for the European profession at the Fédération des Experts Comptables Européens (FEE), which is the representative organisation for the accountancy profession in Europe.

Formerly Paul was Chairman of the CCAB (the 6 UK accounting bodies); a board director and council member of the Financial Reporting Council and chair of the Audit Committee; and member of the City Takeover Panel.

EMA Micro Macro link-SEEA Revision Issues from a corporate accounting perspective

Christine Jasch
Institute for environmental management and economics, IOEW, Rechte Wienzeile 19/10, A 10400 Vienna, Austria
E-mail: jasch.christine@ioew.at

Abstract: **Harmonisation of disclosure reqirements of statistical agencies regarding material and energy consumption, environmental investments and expenditure with the IFAC guidance document on environmental management accounting (EMA) and the GRI guideline on sustainability reporting and performance indicators.**

I. INTRODUCTION

The core part of this project is harmonization of definitions and disclosure requirements for environmental accounting on a national and corporate level. This is achieved via the participation in the revision process of the London Group on Environmental Accounting which has accepted the request by the UN Committee of Experts on Environmental-Economic Accounting to take a leading role in the revision of the SEEA-2003, the worldwide handbook of national accounting [1].

II. ABSTRACT

In 2005 a guidance document on Environmental Management Accounting, EMA was developed for IFAC, the International Federation of Accountants in New York [2]. It is based on a publication on principles and procedures for EMA, which was written for the United Nations Division for Sustainable Development, UN DSD [3]. Both documents were funded within the research framework of the Factory of Tomorrow in Austria.

In the last years both documents have been applied in several case studies, with the focus of developing internal corporate procedures and standards for data collection and disclosure. Experience showed that national disclosure requirements to statistical agencies vary slightly, as definitions are not consistently applied, even though referencing the same framework document (SEEA 2003). This has resulted in recommendations for a further harmonisation of definitions and requirements for data collection and reporting. According to the definition of UN DSD, two types of information are considered under EMA: physical and monetary information. Physical information includes data on the use, flows and final destiny of energy, water, materials and wastes. EMA places a particular emphasis on physical information because (1) the use of energy, water and materials, as well as the generation of waste and emissions, are directly related to many of the environmental impacts of organizational operations and (2) materials purchase costs are a major cost driver in many organizations. Monetary information can include various types of environment-related costs, including materials-driven costs, environmental protection expenditures and others.

Following a request of the statistical division of UN DSD within the current project a review of definitions and reporting requirements of documents provided by the statistical division of UN DSD, Eurostat and selected national statistical agencies will be performed. The aim is to improve consistency of data requirements with the structure of financial accounting systems as well as with the definitions in the IFAC and GRI guidance documents [4],. This will significantly support the design of harmonised corporate information systems and help provide consistent and comparable data on a micro and macro level.

Improved and harmonised data quality is essential for corporations as well as for aggregated statistical analysis, as they provide the ground for several decisions, from investment choices to scientific projects and political instruments and allow better benchmarking. In addition, the time needed for data assessments and aggregations can be reduced significantly, as well for corporations as for statistical agencies.

A further aspect is that this data is increasingly used e.g. for Life Cycle Assessments, which rely on this information for policy recommendations, as no better data is available on a corporate and product specific level.

III. CONCLUSION

The harmonization of definitions and data requirements for disclosure regarding environmental management accounting is in the core interest of organizations, scientists, environmental politics as well as statistical agencies.

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Positioning Sustainability in the Professional Accounting Curriculum

Martin Bennett
University of Gloucestershire Business School, Cheltenham, GL50 2RH, UK
mbennett@glos.ac.uk

Abstract: **Several professional accountancy institutes are considering whether and how to adapt their professional qualification syllabuses in order to include some appropriate sustainability-related content. This poses challenges of defining what this content should be, in the absence of any clear and generally agreed consensus on what can be considered to be sustainability accounting; constraints set by the institutes' education and assessment structures and methods; and not least, a persistent scepticism amongst many practising accountants (the members of these institutes) over either the importance of sustainability per se, or its specific relevance to accountants in their work.**

This study considers the alternative approaches available to accountancy institutes and draws comparisons with other major fundamental shifts in recent history in the context1 in which businesses operate which could affect the role of accountants. It goes on to identify criteria which are relevant to selecting an approach in any given case including the definition adopted of 'sustainability' and how this is distinguished from related terms and concepts such as 'corporate social responsibility' and 'ethics'.

This study was prompted and stimulated by the review that a leading UK accountancy institute is currently carrying out of its professional qualification, and the changes that it is considering which include a requirement to consider the inclusion of sustainability in some appropriate way. However the principles are relevant to all accountancy institutes, and the opinions expressed are entirely those of the author.

I. Introduction

A regular theme in papers presented at EMAN conferences and published in the EMAN books of papers has been the extent to which EMA is being diffused in practice([1] to [3]). Most of these studies to date have either been theoretical or based on studies of practice in companies which have been limited to date, and constrained since as management accounting is internal to the business, the implementation of new accounting practices is not always visible to outside researchers. Also, the application of EMA within any specific company may sometimes be only a temporary rather than an enduring phenomenon if it is driven by a particular 'champion' who may subsequently move on.

This can be addressed by attempting to embed sustainability within a business by institutionalising it by establishing new systems and reports, such as the UK Environment Agency's 'Environmental Accounting System' [4]. Another approach would be to include sustainability in the syllabuses which accountancy students are required to study and be assessed on in order to gain professional qualification from their institute, though with rare exceptions [5] this has to date received less attention. However this presents a basic 'chicken-and-egg' dilemma which is common to many social innovations, that on the one hand practising accountants and the institutes who represent them are unlikely to be willing to add further content into already crowded professional syllabuses unless it is clear; however until there is a widespread familiarity and expertise in sustainability amongst accountants there is little empirical evidence that expertise is a requisite for a career as an accountant.

II. Method And Analysis

This study takes a pragmatic approach and recognises that to position sustainability as a novel issue in kind, even if one of crucial importance, is not on its own likely to be sufficient to persuade professional institutes to adapt their syllabuses. An alternative and potentially more persuasive approach might be to position sustainability as the most recent, and currently most topical, in a series of new factors that have arisen in the business context and to define an appropriate way in which this should be reflected in accountants' professional education.

Insights can therefore be obtained by considering some of the issues and trends that mean that the business context is fundamentally different today from what it was (say) 50 years ago. These might include for example (to take an arbitrary and somewhat random list) globalisation, diversity, complexity, information technology, other technologies, and the substantially increased recognition and importance of risk, supply chain management, the need for broad accountability, and market mechanisms. Other issues such as professional and business ethics, and corporate governance, which are often linked with sustainability are longer-established even if not always in their current form. The study considers each of these issues and develops a taxonomy to reflect how they have been dealt with by the accountancy profession in recent history, specifically

[1] 'Business context' is used here instead of the more usual 'business environment' in order to avoid confusion.

how professional education and assessment has been adapted in their respect (if indeed it has).

III. CONCLUSIONS

Although one potential approach is outlined for consideration, this study does not aim to draw any definite conclusions but to open up a subject that has not been previously been directly addressed within EMAN and stimulate comment and debate, and to raise a number of questions.These include:-

- What definition of sustainability might most helpfully be adopted by accountancy institutes, bearing in mind that some elements may be more amenable to accountancy-related responses than others? And is a narrow definition which is focussed on a specific issue (say, environment) likely to be more or less successful than a broad definition which declines to demarcate clearly between sustainability and other related issues such as corporate social responsibility, and ethics?
- What longevity should be expected for any sustainability-related content that is introduced into a professional accounting syllabus immediately? – would it be expected then to remain there indefinitely (subject to the usual updating as needed), or to be a transient phenomenon which will be redundant as soon as sustainability is generally accepted as an inherent aspect of the tacit knowledge which is routinely expected of every accountant?
- How far should sustainability be treated by accountancy institutes as a specialism or integrated into other existing subject-areas?

It is likely that different solutions may be appropriate for different accountancy institutes, both since their subject focuses vary (e.g. the relative importance of (say) audit versus management accounting), and since the accountancy profession is far from homogeneous internationally, and the nature, importance and scale of accountancy institutes, and the functions and roles of their members, vary widely.

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Measuring Tradeoffs Between Sustainability Issues

Maria Csutora
Corvinus University of Budapest, Fővám tér 8., 1093, Hungary
E-mail: maria.csutora@uni-corvinus.hu

Abstract: **The internalisation level of sustainability issues varies among topics and among countries. Companies trade more internalised issues for less internalised ones. Discrepancies between legal, market and cultural internalisation lead to different escape strategies: firms develop a high level environmental management system and they have nice sustainability policy and reports. These achievements cover the fact that their total emission keeps increasing and they do not proceed in solving the most crucial community or corporate governance problems. 'Escaper' firms are often qualified as 'leading' ones, as a current stream of research is also 'escapist': it puts too much emphasis on sustainability efforts as compared to sustainability performance.**

I. INTERNALISATION OF SUSTAINABILITY ISSUES

Many authors have studied trade-offs between economic and environmental performance for decades. Researchers, however, have just recently started to survey how sustainability issues are prioritised. Trade-offs depend greatly on company internalisation of different sustainability issues. Internalisation of problems means that the consequences of unsustainable company practices devolve upon the company. The more an issue is internalised, the less it interferes with business interests. For example, investing in environmental technologies might result in negative profit implications without regulation. Good environmental performance, however, is a precondition for meeting business goals, if withdrawal of operational permits is a threat in the case of negligence.

Harvard professor Kornai (1992) denotes three possible forms of coordination in the economy: bureaucratic, market or ethical. Legal coordination manifests in the emergence of laws while market coordination relates to prices. Ethical (or, in other words cultural) coordination may dominate legal requirements. Corruption and tax evasion are illegal throughout the world, yet remain facts of life in many countries. Similarly, many cultures let pollution go unchallenged, even if it breaks the law.

Internalisation can also take the form of legal requirements, market mechanisms, or ethical pressure. High energy prices promote efficiency measures through the market mechanism and lead to reduced emissions of global pollutants. Wasteful technology leads to high production costs in an era of skyrocketing energy prices. Voluntary guidelines fall into the category of ethical coordination. (see Zadek 1998) They are implemented either because managers act ethically or because they want to impress their ethical stakeholders. For example, the unacceptable employment of children in developing countries may lead to NGO protests or consumer boycotts in the industrialised world. Consequently, companies can foresee financial impacts in case of bad business practice.

The level of company internalisation of various sustainability issues differs. (Table 1) Environmental performance, as well as safety issues, are better absorbed than most social issues, but less than economic ones. Elusive expectations regarding social issues are often hard to actualise in practice. This enables firms to trade off sustainability issues. They can build up a positive picture on their sustainability performance based on some well-internalised and well manageable issues, while leaving harder issues unaddressed. The problem is complicated by the difficulties in sustainability measurement: commensurability of various issues is not always proportional to their importance. Consequently, we arrive at a policy-performance and scope-depth paradox.

Firms can manage trade-offs by:

- Focusing on more internalised and least cost sustainability issues
- Focusing on more quantifiable issues.

Brown and Fraser (2006) also claim "many companies are more concerned with the image rather than the substance of 'corporate citizenship' and 'sustainable development'."

This paper delineates firm level 'escape' strategies that allow firms to build up a positive sustainability image while escaping from solving core sustainability issues. The next two sections describe two measurement paradoxes that make such escapes possible. Following this, a short theoretical overview of escape strategies is provided. A test is then made of how frequent these strategies are in practice. A former OECD survey with more than 4000 responses will be used for this purpose.

II. THE POLICY – PERFORMANCE PARADOX

The policy-performance paradox suggests that enhanced sustainability efforts may be coupled with a deteriorating sustainability position.

Bebbington (2001) warns that one should be careful about using sustainable development to mean "good environmental management". Sustainable development is a concept designed to address the question what kind of economic system would lead to everyone's needs being met in an ecologically sustainable and socially just manner? While "good environmental management" is therefore part of the sustainable development agenda, it is not a central part of the debate.

Countries with the best sustainability policies and highest environmental sustainability index rankings 'boast' the largest ecological footprint. Environmental sustainability index embrace five components such as environmental systems, reducing environmental stresses, reducing human vulnerability and global stewardship. It

is an exceptionally complex indicator covering both policy focused and performance-focused elements developed at Yale University. Better sustainability policy is supposed to lead to better sustainability performance. Nonetheless, recent research predicts further growth of the ecological footprint and stable ecological deficit in Europe and North America despite their impressive policy efforts. (Lenzen et al. 2007)

Countries that are considered the most proficient 'social enablers' on the AccountAbility country rating face severe social problems: namely aging, and a decreasing birth rate. With no immigrants from other parts of the world, Europe will face the consequences of a declining population, an aging society and crises in the pension system. Can we call a society 'sustainable' if it is not capable of preserving a stable population level?

Industries with the worst reputation on sustainability issues often produce the nicest sustainability policies. Is a nice policy capable of hiding a deficient performance? Firms too often focus on the policy or effort side rather than on the impact. The two-tailed Pearson correlation among AccountAbility scores of Fortune 100 companies shows only week correlation between impact and engagement or strategy. Europe boasts of being host to some 90 percent of the most accountable companies. Regardless, the ecological footprint of Europe is increasing, and Europe would be in trouble in meeting its Kyoto targets without counting in the low level GHG emissions of new EU accession countries. In theory, better sustainability strategy is supposed to lead to a better sustainability position. There is no indication, however, that this will actually come about in the near future.

This paper will address the policy-performance paradox at firm level.

III. The scope vs depth paradox

The scope-depth paradox proposes that a trade-off exists between the scope and depth of sustainability agendas. The more we expand the list of items, the less we are able to capture most crucial issues.

Statistics may tell us everything about nothing or nothing about everything. Sustainability and CSR reports are gaining ground over more narrowly-focused environmental and social reports in Europe (ESRA 2008). GRI Guidelines are comprised of about 60 different indicators on 7 sustainability domains. The price is a loss of detail and scattered attention between topics. Progress in marginal issues can easily mask failure in vital ones. Less costly sponsorship activities may disguise the defencelessness of communities to shut-down and relocation decisions.

Researchers often suffer from the multifaceted and complex nature of sustainability. They struggle when they are supposed to aggregate indicators for diverse topics, such as environmental impacts, workplace accidents, corporate governance, and community involvement.

When weighting is applied (AccountAbility, Srdjevic et al, 2007), the analysis can always be criticized on the basis of who attributed the weighting, the way topics got prioritised and whether the weights are stable over a reasonable period of time. The problems of weighting cannot be circumvented, though, and the level of difficulty increases as the number of issues rises. Different sustainability issues have different levels of importance. How should anti-discrimination company policy be valued if we do not survive climate change?

Several researchers are attempting to overcome the problem of comparing apples and oranges by attributing equal weight to each topic. (see Ramos and Melo, 2006) By doing it, however, marginal issues can easily cover up substantial ones. Broadening the scope further amplifies the problem by dredging up even more issues. Others try to organise the variety of issues in a more perspicuous way, so that impacts, trade-offs, alternatives or achievements can be more easily assessed. (Bonachi, Rinaldi, 2007, Figge et al, 2002, Wagner and Schaltegger 2006). The resulting picture is still far too complex.

Stakeholder pressure is able to transmit and aggregate hard-to-pin-down cultural pressures on a variety of topics towards firms. It is a central determinant factor of environmental proactivity. (González-Benito and González Benito, 2006) It will, however, lead us to the problem of power distribution among stakeholder groups regarding sustainability issues.

A possible solution may involve better internalisation of sustainability topics by law or by market instruments, so that monitoring laws or prices is sufficient for managing most topics.

IV. 'ESCAPE' STRATEGIES for managing tradeoffs

The paradoxes described in the previous sections offer a wide range of possibilities for managing tradeoffs between sustainability issues in an easy and inexpensive way. While companies' eco-efficiency improves, and progress is demonstrated in certain fields, they may even amplify their contribution to global unsustainability. Strategies leading to this result are labelled 'escape strategies'.

Escape strategies typically address marginal sustainability topics while missing the opportunity to solve crucial issues. Their major characteristics are:

• A concentration on eco-efficiency rather than eco-effectiveness. Increasing sales typically offset eco-efficiency improvements.

• A focus on measures, instead of performance. For example: supply chain audits rather than supply chain impact reduction, energy saving measures rather than real - cutback on energy used, development, promotion and publicity of anti-discrimination policy rather than - fair composition of human resources.

• Incremental steps in marginal issues cover up an incapability to improve in core sustainability issues. For example, community relations are managed by inexpensive sponsorship.

• Decreasing direct impacts by passing them over to others.

Shifting direct impacts to others may take different forms:

• Outsourcing risky, polluting or other undesirable activities. In this manner, companies can rid themselves of some activities negatively affecting sustainability performance. They may opt to buy instead of make products created using inexpensive child labour or made through emitting massive amounts of pollution, or outsource risky laboratory activities as well as the burden of waste management. Although companies cannot get rid of responsibility per se, they can still reduce their responsibility for waste by outsourcing. No question, supply chain management and procurement offer unbeatable opportunities in reaching and greening SMEs that are usually invisible to regulators (Preuss 2005). Nonetheless, greening the supply chain reduces responsibility for corporations to green their own domain. The sustainability impacts of inputs and intermediaries are difficult to capture.

• compensation

A compensation strategy might lead to conflicting consequences in the short and long term. Positive short term, but negative long-term impacts prevail when companies use compensation to offset environmental impacts while penetrating new markets. Market growth accelerates environmental degradation which may outweigh the temporal gains from reduced impacts. (Figge and Hahn 2006, Dyllick and Hockerts 2002, Schnitzer 1999). Multinational enterprises cannot resist infiltrating into the new markets of emerging countries. The effects are positive in both long and and short term only when a more eco-efficient company crowds out a less eco-efficient competitor.

• Relocating certain activities to countries with less stringent expectations (pollution havens). Many countries don't even oblige companies to measure their discharges to the environment. A high number of studies have been devoted to analysing the phenomena of pollution havens. (See Kolk 2000) They have lead to contradictory results. Siting decisions have a multifaceted nature; the environment is only one contributing factor among others in the complex game. Nevertheless, if we regard environmental strategies as a pattern rather than a plan (Wehrmeyer 1999) we cannot deny the fact, that some industries of high income counties are repositioning to enter emerging countries, but still serve the needs of consumers in the 'developed' world. Consumers in 'developed' countries are responsible for a significant part of the pollution emitted in China.

• emission leakage. Pinkse and Kolk (2007) speak about the risk of 'emission leakage' to other states when discrepancies are present in emissions trading schemes.

Prevailing escape strategies are not the sole responsibility of companies. If members of society pretend to strive toward sustainability through legislation while maintaining their accustomed lifestyles, then companies may also pretend that they are making full efforts towards sustainability, while trading core sustainability issues for marginal achievements**.**

V. 'GENUINE' STRATEGIES FOR IMPROVING SUSTAINABILITY

Although escape strategies are the focus of this paper, the reader may be interested in a short description of perceptions regarding genuine strategies. Genuine strategies focus on hardcore sustainability issues and effects, rather than putting marginal efforts in the spotlight. They are "more aggressive, more creative, more unorthodox. It is a sort of corporate environmentalism that can lead to substantial breakthroughs" (Frankel 2001: p.282.) Genuine strategies allow for growth in innovative firms, if they crowd out less efficient or more polluting ones. They produce positive environmental value added when sector average eco-efficiency is used as benchmark. (Figge and Hahn 2006). Another aspect of genuine efforts presumes that firm activity does not accelerate market expansion and consumerism. Thus, global environmental load must decrease due to developments from the innovative firm. Clean sectors are allowed to expand if they crowd out industries with a higher environmental burden. For example, web-based outlets could crowd out conventional outlets that require that customers drive from shop to shop.

Genuine strategies embrace honest efforts in order to reduce the unsustainable environmental burden (by addressing issues such as total pollution). They include:

• Radical product development. E.g. alternative energy, passively heated housing solutions with an ultra-low energy demand and a high level of information technology.

• Break-through production technology innovations

• Redefining the core business or following a "blue ocean strategy" (Kim, Mauborgne 2005, Bartek-Lesi 2007 et al.). An oil company may redefine itself as an energy company and invest in renewable energy. Polonsky and Rosenberger 2001 claims that consumers do not need to actually own products if there are other ways of delivering their needs. For example, people can purchase access to Toyota's electronic automobile fleet and travel short distances.

• Life style marketing. Discouraging energy and material-intensive ways of life.

• Management techniques, e.g. spreading best practice and best technologies among subsidiaries. (Gupta and Govindarajan 2000, Denso)

• Local orientation. Relying more on local suppliers and local resources. Locally-oriented firms have limited growth potential and are not so much responsible for accelerating unsustainable economic growth as global firms. They also have important social functions within the community.

Runhaar et al. (2008) found that environmental leaders comprise a heterogeneous group of companies in their explorative research. According to their typology, sustainability was manifested as a main goal only in one subgroup of SMEs. It formed a secondary goal in another SME group and in large company environmental leaders.

It is suspected that large corporations possess some built-in inertia due to the variety of their activities and sites, and follow dual strategies before going green.

Genuine strategists should rather be hunted for among SMEs. This is not equal to saying that the environmental performance of SMEs is better on average than larger companies: it is probably not..

VI. 'Dual' strategies

Dual strategies are combined genuine and escape strategies. One branch of a company follows a genuine approach, while most business activities resist change. The firm consents to one subsidiary going green, while keeping the others on track. The one hand it tests radical sustainability strategies and attempts to prepare for a carbon-constrained age. On the other hand it insists on maintaining its conventional cash-cow branches, no matter how their sustainability performance scores. Many big automotive corporations, as well as oil giants, follow this approach. They produce hybrid cars or have an alternative energy branch, but will not give up profits from oil or on big petrol guzzling cars. For this reason, they exhibit a mixed picture.

BP is a typical example of a dualist. It is among the world's top solar manufacturers and was the first company to introduce an in-site carbon compensation system. It was the number one on AccountAbility rating in 2007. In 2000 BP tried to rebrand itself as being 'beyond petrol', although this campaign was ended due to credibility issues – Bp is a company which profits most from the oil business.

Companies following a genuine strategy, escape strategy or dual strategy are typically labelled 'proactive', 'leading' or 'innovative' without distinction in the research literature. (Azzone 1994, Hunt&Auster 1990, Steger 1988.

VII. Conclusions

As we expand the scope of sustainability issues, we let most crucial issues go out of our hand. Many companies show increasing eco-efficiency and high level of sustainability policy, while their contribution to global unsustainability is actually increasing. Environmental management research is unable to reveal these strategies, as sustainability policy, rather than sustainability performance stands in their centre of attention.

Citizens and companies must acknowledge trade-offs and accept the price of sustainability: the high price of alternative energy, the high danger of nuclear energy, or a limited standard of living. Without that, companies will escape into false green wash strategies and researchers into escapist views regarding their performance. Studies must shift the focus from policy to performance and from effort to effect in order to overcome this paradox. Society must also give credible and reliable signals on its sustainability requirements towards companies.

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Table 1 Internalisation of certain sustainability issues

Example	Level of internalisation	Type of internali-sation	Way of internalisation	Escape possibilities	Cost of implementation minus cost of breach	Major unsolved issues
Worker safety issues Food safety Nox emission	Very high	Legal	Target values or technology standards	Difficult to escape (relocation, outsourcing)	Negative (infringement might result in a loss of operation permit)	Workplace climate, monotones jobs,
Eco-efficiency	*High*	*market*	*High energy prices*	*Limited possibilities for relocation*	*Might be negative (See Frondel et al 2007)*	*Decreasing eco-effectiveness*
Reduction of GHG emission	*Moderate*	*Legal and market combined*	*Marketable permits. (Gives more flexibility than targets).*	*Compensation, relocation, emission leakage*	*Sometimes negative, more often positive*	*Increasing GHG emission at global level*
Anti discrimination policy	Moderate -low	Ethical or legal	Laws apply only to policy. They don't define target values.	Nice policy but bad performance (low % of minorities)	Positive	Employment of handicapped and minorities
Community relationship	Low	Ethical	Voluntary guidelines, NGO activity	Focusing on minor issues: compensation to local communities, sponsoring activity	Positive	Community defencelessness to relocation decisions, defencelessness of local suppliers to commercial buyers

Stakeholder-driven CSR dimensions and criteria for food chains

[1]Sari Forsman-Hugg, [2]Juha-Matti Katajajuuri, [3]Johanna Mäkelä, [1]Jaana Paananen, [2]Inkeri Pesonen, and [3]Päivi Timonen

[1]MTT Agrifood Research Finland, Economic Research, Luutnantintie 13, FI-00410 Helsinki, Finland

[2]MTT Agrifood Research Finland, Biotechnology and Food Research, FI-31600 Jokioinen, Finland

[3]National Consumer Research Centre, P.O. Box 5, FI-00531 Helsinki, Finland

E-mail: sari.forsman-hugg@mtt.fi

***Abstract*: The objective of the paper is to determine the content and criteria of CSR in the food sector by combining stakeholder-driven and supply chain focus. The paper presents how our research process proceeded iteratively and built on several steps and combined several methods and approaches. The research project took an action oriented approach and was based on case studies. The project drew on three different case food products and their supply chains: rye bread, broiler chicken products and margarine. The content of CSR was constructed in interaction between researchers, consumers, companies and their interest groups. The research project combined the compilation and analysis of extensive information sources, constructive technology assessment and stakeholder workshops. The research contributes by establishing a framework of seven main dimensions to outline CSR issues in the food chain.**

***Keywords:* corporate social responsibility (CSR), food production, stakeholders, supply chain**

I. INTRODUCTION

Corporate social responsibility (CSR) is increasingly acknowledged as a mega trend in food business. Also sustainable consumption has become a widespread topic in public discussion. From the business point of view CSR enhance innovative potential and competitiveness of companies [1]. In the food sector, companies are facing fast changes regarding the growing concern of consumers on the topic of traceability of the food chain, the origin and production manners of raw materials and food safety, environmental impacts of products and processes as well as societal issues such as animal welfare. Companies have to meet these concerns in an increasingly global environment.

Customers, governments, NGOs, the media and society are all asking companies to give an open and well substantiated account about how they operate and what is their impact on society. These concerns are justified in many ways; for example around one third of environmental impacts of private consumption is due to eating [2]. Consumption choices have an effect on all players of the chain, which highlights the importance of supply chain focus on CSR. This brings, in terms of CSR, new dimensions and challenges to the management and development of food- and agribusiness companies.

Food- and agri-business companies are increasingly operating in the product chains in complex networks of international chains of suppliers and customers. However, little is known how to cover, organise and manage sustainability in these complex chains and networks [3, 4]. In addition, the significance of stakeholder dialogue for companies is widely acknowledged [5, 6, 7, 8] but empirical research on how to apply stakeholder-driven approach in building the content of CSR and how to put stakeholder views in company practices is scarce. This paper attempts to integrate these two perspectives. The paper is based on the research project1, with an objective to determine the content, criteria and indicators of CSR in the food chain from product perspective by combining stakeholder-driven and supply chain focus. A specific focus of this paper is on the content building of CSR in the food chain context through a stakeholder dialogue in order to identify the key dimensions of CSR in the food chain context.

II. SUPPLY CHAIN FOCUS ON CSR

The widely accepted approach to CSR is based on the broadly accepted Triple Bottom Line (TBL) with three dimensions: economic, social and environmental responsibility [9]. CSR takes a company level view to sustainable development. Additionally in this study, a starting point is that CSR implies a wider perspective than the view that companies act in compliance with the legal norms.

Both a theoretical and methodological challenge is to bring a supply chain focus into the definition of content and criteria of CSR. Production of a certain food product item usually includes several raw material supply chains and many sub-processes taken place in several companies. These processes generate a large variety of impacts. This makes identification of the chain, let alone the management of the chain and information from the CSR perspective extremely challenging. In order for a food product to be produced in responsible way requires that the entire supply chain takes account of the unwanted impacts of its actions on the society. When it comes for example to the environmental

impacts, the studies [10] have shown that in the food chain a significant contribution to the total environmental impacts is often caused by agricultural production and not the production of final product.

From the environmental responsibility perspective there exist standardised methods such as life cycle assessment (LCA) to assess environmental impacts through the entire supply chain. Furthermore, it has been suggested in a theoretical level to extend LCA to cover also the other dimensions of CSR [e.g. 11].

III. RESEARCH PROCESS AND METHODS

The research project takes a qualitative approach and is proceeding iteratively and building on several steps. The project combine several methods and approaches such as action research with participatory processing, stakeholder workshops, interviews of experts and company representatives, life cycle thinking and qualitative analysis of data based on interviews, stakeholder workshop outputs and other sources. The approaches and methods are used in a novelty way with aim to capture and combine the stakeholder-driven and supply chain oriented focus to CSR. We deliberately did not take TBL-categorisation [9] or other suggested CSR frameworks [e.g. 12] as given but the basis for the content building of CSR was generated by analysing stakeholder dialogue data based on grounded theory type of approach.

The project draws on three different case food products. They are rye bread, broiler chicken products and margarine. The first two are produced by a leading Finnish bakery and a meat processing company. The last one is a private label product by a big Finnish retail company. The products and their supply chains are different, which was assumed to lead to a different content of dialogue and its outputs.

The research process can be divided into the three broad stages including several sub-tasks. The project started with extensive data collection from the case products and their production chains (Step 1). In the second stage, we organised stakeholder workshops for each product in order to identify key aspects of supply chain CSR (Step 2). Based on the analysis and interpretation of the workshop outputs, we identified seven key dimensions of supply chain driven CSR. In the third stage (work in progress), a set of criteria and measures are to be generated for the key CSR dimensions (Step 3). The first two steps are described in more detailed by [13].

In the first step, chain-specific data were collected for each of the case products. The purpose of the chain data and respective CSR issues was to give a detailed description of the production chain and current company practises. Data were collected and generated by means of detailed inquiries and interviews of company representatives along the production chain, interviews of experts, discussions with key persons of the companies and using company documents, CSR reports, industry reports, statistics and other data sources on CSR issues concerning the entire production chain of the case products.

Data were collected by adapting a uniform procedure taking account of case-specific characteristics. All data collected during the process were documented in order to ensure the transparency of the research process itself. For example, all the interviews of company representatives, stakeholders and experts have been tape-recorded and transcripted. The data also included internal and confidential company documents. For each of the case, the entire production chain and processes were described in detail. This description also included origin of raw materials and products as accurately as possible as well as quality, human resource management and other management systems in the companies through the chain. Main focus in data collection was in CSR issues that were classified and reported under the TBL dimensions. Examples of data collected under TBL-dimensions include:

Economic responsibility: profitability of farming, industry profitability, cost structure and investments, price margins, producer- and consumer prices, history and strategy of the brand, consumer segments.

Social responsibility: well-being of farmers and workers in the production chain, wages, work safety, employee training, equality issues; animal welfare; employment effect of the supply chain; origin of raw materials, product safety issues; research and development activities of companies; customer satisfaction and feedback.

Environmental responsibility: description of main environmental impacts, related actions and risks, data on environmental audits, material- and eco-balances of companies; environmental impacts of the case companies, LCA-based environmental impact data on supply chain.

As an example, from environmental point of view, all the main environmental impacts and related actions were described and documented. In addition, different environmental related acquisition and production criteria and management systems were reported. In all the case studies following environmental impacts of products were assessed: climate change, acidification, eutrophication, primary energy demand and photochemical ozone formation (smog). Finnish Eco-Benchmark [2], developed for illustration of environmental impacts, was used to assess the contribution of different environmental impacts for total impact of the products. This information

was needed when comparing environmental impacts of raw materials of different origins for the production of final product.

Based on the extensive data collection process, a detailed chain report was written for each of the case. Based on this report, a booklet with informative background material was produced. The booklet was written in popular language and its purpose was to give the participants of the stakeholder workshop a compact description of the supply chain of the case product and an idea of how the chain is functioning from the CSR point of view. The main aim of the background material was to act as a stimulus for the workshop.

One part of the interactive and participatory dialogue between stakeholders built in the project was the implementation of workshops (Step 2). The role of the workshops was to provide an open, inspirational and interactive forum for a stakeholder dialogue. They were inspired by a constructive technology assessment (CTA) type approach [14]. The aim was to promote the transfer of ideas and the encounter of representatives from different stakeholder groups in order to ponder dimensions and content of CSR. Stakeholder workshops for each of the case were executed in 2007 and focused on the viewpoint of production chain. The participants were recruited from three main groups. One third of the participants was business people representing supply chain, about one third consumers selected from National Consumer Research Panel, and the rest were experts and representatives of important stakeholders specific to each case. In each workshop about 30 people were invited to participate. A booklet of background information that summarised the content and findings of CSR issues of each case supply chains were sent to participants a couple of weeks before the workshop.

The workshops were conducted in the following manner. A large share of the time in the three hours workshop was devoted to group sessions concentrating on the three chosen themes specific to each case study [12]. The group sessions consisted of the creation of CSR ideas in relation to the topic of the group and valuation of ideas.. The workshops and their outputs as well as all data collected during the research project have been documented in order to ensure the transparency of the research process itself.

IV. SUPPLY CHAIN CSR DIMENSIONS

Some summary results based on the stakeholder workshops held for the case rye bread, broiler chicken products and margarine products are presented in this section. In three stakeholder workshops the participants wrote altogether about 450 ideas related to the responsibility issues (130–170 ideas per case). Tables 1, 2 and 3 reveal which ideas in each product case and each group session were collected on the summary chart based on the votes given by the workshop participants.

TABLE 1: SUMMARY OF THE MOST IMPORTANT IDEAS IN THE CASE OF RYE BREAD. NUMBER OF VOTES GIVEN BY THE WORKSHOP PARTICIPANTS IN PARANTHESES. THERE WERE 9 PARTICIPANTS IN THE SUB-GROUPS INDICATING MAX 18 VOTES PER IDEA.

Group session 1: Raw materials of the rye bread	**Group session 2: People in the production chain**	**Group session 3: Responsibility of the value chain of the rye bread**
Ecology; sustainable cultivation (18)	Adequate margins (13)	Environmental issues (12)
Cleanness and healthy (14)	Safe products for consumers (10)	Fair price distribution in the chain (9)
National identity (12)	Take care of environmental issues (9)	Healthy / health products (9)
Continuity of farming (9)	Labour welfare*	Flow of information (8)
	Livelihood and wages*	Safe products (7)

* Participants of this sub-group wanted to collect these ideas on the summary chart due to many produced ideas that were close to these themes although they individually did not get enough votes.

TABLE 2. SUMMARY OF THE MOST IMPORTANT IDEAS IN THE CASE OF POULTRY CHICKEN PRODUCTS. NUMBER OF VOTES GIVEN BY THE WORKSHOP PARTICIPANTS IN PARANTHESES. THERE WERE 10-11 PARTICIPANTS IN THE SUB-GROUPS INDICATING MAX 20-22 VOTES PER IDEA.

Group session 1: Environmental impacts of broiler production	**Group session 2: Animal welfare and product safety**	**Group session 3: Responsibility of the value chain of the poultry chicken products**
Efficiency of processes; eco-efficiency (11)	Treatment of animals (15)	Environmental issues (13)
Sustainable future (10)	Animal conditions (13)	Cleanness of products (12)
Domestic energy and food (10)	Open information flow (13)	Fair income distribution in the chain (10)
Consumption concerns (10)	Welfare of farmers	Employment effect of the chain based on Finnish broiler production (10)
Animal welfare (9)	Cleanness in the production chain (10)	Transparency and traceability of the chain (9)
Using best technique and competence (8)	Food control (9)	Hygiene issues, zoonoos control (7)
Low environmental impacts (8)	Responsible consumption (8)	

TABLE 3. SUMMARY OF THE MOST IMPORTANT IDEAS IN THE CASE OF MARGARINE PRODUCTS. NUMBER OF VOTES GIVEN BY THE WORKSHOP PARTICIPANTS IN PARANTHESES. THERE WERE 10-11 PARTICIPANTS IN THE SUB-GROUPS INDICATING MAX 20-22 VOTES PER IDEA.

Group session 1: Raw materials of margarine	**Group session 2: Manufacturing of margarine**	**Group session 3: Responsibility of the value chain of the margarine products**
Environmental impacts (9)	Safe product for consumer (13)	Satisfied consumer (12)
Socially fair production (9)	Pay attention to environmental problems (10)	Long-term planning (11)
Health impacts (8)	Labour welfare (9)	Co-operation in the food chain (9)
Economy for companies, share-holders and primary producers (7)	Detailed product information in the package (7)	Equality of employees in different countries (8)
Fair income distribution in the chain (7)	Energy savings in production and consumption (7)	Holistic understanding (7)
Traceability (7)	Create welfare by providing jobs (7)	
	Competitive quality (7)	

The analysis of the workshop outputs reveals some similarities on CSR issues between three different products and their supply chains although some casespecific emphases were also identified. The workshop participants shared the view about environmental concern in all cases. Environmental concern was common to all of the cases and shared by all chain actors and stakeholders. Moreover, fair income distribution in the chain, nutritional and health issues, cleanness, product safety, consumer responsibility, and, in the case of broiler chicken products, animal welfare were strongly associated with CSR of the food chain. In addition, transparency and/or openness was considered as a crucial element in many CSR issues, that is, supply chain actors should provide transparent information related to CSR issues in the food chain.

Based on the analysis of the carefully documented workshop data and interpretation of the results, we identified a framework of seven key supply chain CSR dimensions: environment, product safety, corporate nutritional responsibility, labour welfare, animal health and welfare, economic responsibility and market presence (Figure 1).

FIGURE 1: SUPPLY CHAIN CSR DIMENSIONS.

Based on the supply chain CSR framework the research team is completing criteria and measures for these seven supply chain CSR dimensions. This process has included a number of internal workshops, a detailed analysis of stakeholder workshop data, a study of literature and interviews of both different experts related to these CSR dimensions and company representatives. In addition, a very first draft of the set of CSR criteria and measurement was tested in the criteria piloting workshop with researchers and experts. Based on these data, the content of CSR dimensions are looked next in more detailed.

Environment. Environmental and ecological questions and concern were emphasised in all case study stakeholder workshops by consumers, companies, NGOs and research scientists. However, the way and intensity the environmental issues were discussed between different participants varied a lot. For example, the business people and experts used economical terms such as eco-efficiency. Consumer, by contrast, used more environment or ecology related terms such as pollution of water. Yet life cycle thinking was discussed quite a lot as one of the key approaches in this context. Currently, companies do report on their environmental impacts and energy issues up to a point at the company level. When it comes to the criteria for environmental issues, experts and scientists did agree that the starting point for these criteria should be life cycle approach.

Product safety: Product safety was also a theme that was discussed relatively lot in all the three workshops. Product safety was approached from several perspectives such as product traceability, knowledge of origin, principles of product safety (e.g. HACCP), and cleanness of the products. The experts emphasised the high level of food product safety in Finland, which comes from demands of the legislation and company's in-house control as well as persistent collaboration between the Finnish food chain actors and authorities. On the other hand, consumers are not well informed about companies' food safety issues or microbiological and

chemical analysis and potential risks of the food. Globalisation of the food markets is leading to even more complex networks of food supply chains, which, in turn, sets great challenges to product safety principles and especially for traceability requirements. From the point of view of CSR traceability and transparent information of food supply chain actions related both to raw material origin and production manners and practises could be as a core of CSR criteria in this dimension.

Corporate nutritional responsibility: Health aspect is an increasingly important supply chain CSR dimension. Aspects related to health and nutrition were discussed quite a lot of in the stakeholder workshops irrespective of the product. Health and product safety were linked in many discussions. Themes discussed included among others healthy products, health impacts, product information, labelling (e.g. GDA) additives, environmental questions such as use of pesticides and fertilizers. Based on the expert interviews the dimension was labelled nutritional corporate responsibility instead of healthiness since the nutritional corporate responsibility is a wider concept that can be applied to all food companies.

Labour welfare: In the stakeholder workshops numerous ideas about labour welfare theme were produced including working conditions, works safety, motivation, salary, equality and employment effects of the entire chain. However, labour welfare issues did not get high priorities in the voting process of CSR ideas by stakeholder participants. This could be explained by the fact, that stakeholders do no necessarily find crucial weaknesses in these issues in Finland. However, labour welfare dimension is considered an essential CSR dimension in literature and by experts that were interviewed that we did include it as one of the seven supply chain dimensions. A starting point for the labour welfare criteria will include that a company first identifies its own development needs for labour welfare dimension and based on this set the targets that are to be followed and reported annually. From the supply chain perspective it would be important to find ways how to promote labour welfare of upstream actors such as primary producers.

Animal health and welfare. There was one animal based product, broiler, included in case studies. In corresponding stakeholder workshops animal issues, especially, animal welfare was highlighted from CSR point of view. The themes discussed in the workshops included matters such as animal conditions, treatment of animals, zoonoos control, link between animal welfare and producer welfare. The discussion focused more on animal welfare than animal health aspect, especially from consumers' side. For the animal welfare and health criteria one has to first identify what are the relevant animal health and animal aspects based on scientific research within the field. Market presence: One of the CSR dimension was defined as market presence that can be defined as an interaction between a company and its specific markets. This requires that a company first identifies its specific markets and the main stakeholders within the markets. In the case of rye bread, local market presence was specifically highlighted. For the Finns rye bread is a traditional product with strong cultural heritage and it seemed to matter from the cultural identity point of view whether the raw material, specifically rye, is originated from domestic sources. The significance of the origin of products and their raw material was also discussed with the cases of broiler chicken products and margarine products, although it was not considered as a self-evident issue. In this dimension, 'glocal' orientation should also been bear in mind, since food companies operate more and more on international markets and they face local market challenges wherever they operate. Due to this it is important that companies can themselves define their 'local' markets.

Economic responsibility: Economic performance is fundamental to understanding the organisation and forms the basis for all other CSR dimensions. A long-term financial performance enables companies to carry more responsible actions including management of unwanted impacts towards stakeholders and society. In the stakeholder workshop, especially income distribution and price margins in the food chain were extensively discussed. A special attention was paid to profitability and continuity of farming and this was concerned especially by consumers. For the criteria building, experts interviewed specifically stressed that from the supply chain CSR point of view economic impacts to stakeholders and society are more relevant than traditional financial performance indicators that are already available and reported.

V. CONCLUSIONS AND DISCUSSIONS

The research contributes by establishing a framework of stakeholder-driven key dimensions to outline CSR issues in the food chain. The research continues by completing a set of criteria and measures for the identified CSR dimensions. The results gives food- and agribusiness companies and chains a better understanding of core CSR issues and their relevance in complex and global business world. This may provide food- and agribusiness companies' to promote their actives towards more responsible and sustainable direction and may provide elements to build sustainable competitive advantages including new product and business opportunities based on CSR innovations.

Anyhow, the three stakeholder workshops held have produced a lot of material, on the one hand, on

the main themes related to the content of CSR in the food chain and, on the other hand, on the discussion, argumentation, and rhetoric on CSR issues between food chain players, consumers and other stakeholders. The entire research process has so far turned out to be a unique learning process for both researchers and company representatives in overall, as well as for consumers and other stakeholders involved in the workshops.

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Stakeholders' social and environmental expectations – premilinary results of an empirical study among Hungarian ISO 14001 certified companies

György Málovics, Izabella Szakálné Kanó, Szabolcs Imreh
University of Szeged, Faculty of Economics and Business Administration, Institute of Economics and Economic Development, Kálvária sgt. 1, 6722 Szeged, Hungary
E-mail: malovics.gyorgy@eco.u-szeged.hu

Abstract: **Corporate social responsibility (CSR) andcorporate sustainability (CS) are even more popularand convergent concepts both in economics andpolitics. Many projects within the EU aim to enhancethe willingness of the business sector to voluntarilycontribute to social and environmental goals besidesthe business ones. However, it is by far not clear howCSR and CS may contribute to the global goal ofsustainability. In our paper we review the paradigmsof CS and present the preliminary results of ourHungarian empirical research regardingstakeholders' environmental and social expectationstowards business.**

I. INTRODUCTION

The self-destructive nature of the present socioeconomicprocesses is well known since the publicationof the Bruntland Report [15]. The unsustainability ofthese processes is reinforced nowadays by quiteinfluential documents like the latest report of IPCC [25]and the Stern Review [11].

According to the mainstream economic paradigm,even in the light of unsustainability, it is not necessary torethink the role of the business sector in society.According to the shareholder theory the onlyresponsibility of the companies in the market economiesof the present is to create shareholder value with legal andfair instruments [13].

Meanwhile, shareholder theory is the subject ofextensive criticism from the aspect of its contribution tosustainability [45], [33], [19]. Therefore, in the lastdecades new concepts regarding the business-societyrelationship emerged. One of them is corporatesustainability (CS). The starting points in the search forthe criteria of the sustainable enterprise are the differentmacro-level concepts of sustainability.

However, there is no consensus on the criteria ofmacro-level sustainability. We find quite different andoccasionally contradictory theories of sustainability ineconomics. We can differentiate between the weak andstrong forms of sustainability [7], [38]. Some authorsseparate four degrees of sustainability on the weak-strongscale [29], [35]. We also find significant differencesbetween the sustainability paradigms of environmentaleconomics and ecological economics [41], [8], [26], [21].

II. PARADIGMS OF CORPORATE SUSTAINABILITY

As a result of the conflicting macro-levelsustainability paradigms there exist also differencesystems of criteria regarding the sustainable corporation.In the following we briefly introduce four paradigms ofcorporate sustainability.

A. The concept of the World Business Council on Sustainable Development (WBCSD)

According to the corporate sustainability paradigm ofthe WBCSD – which also highlights the selfinterpretationof the corporate sphere regardingsustainability – no radical changes are needed from thepart of business in order to reach the state of sustainability[43]. Continuous corporate greening – enhancing ecoefficiency – and instrumental stakeholder managementresult in a win-win situation. It is both beneficial from theaspect of the long-run competitiveness of the companyand from the aspect of the society (including the naturalenvironment).

However, this win-win situation can be questionedfrom several aspects. First, it is not yet proven thatsocially and/or environmentally responsible corporatebehavior has business advantages [39] [20]. Second, thewell-documented rebound effect [4] and the fact, that ecoefficiencyis a relative and not an absolute sustainabilityindicator [14] [24] questions eco-efficiency'seffectiveness in contributing to sustainability.

Furthermore, the contribution of instrumentalstakeholder management to sustainability can also bedoubted. The essence of the instrumental stakeholdermanagement is that the company has to consider theinterest of several stakeholders other than shareholders.

However, it examines the satisfaction of certainstakeholder demands as a business opportunity andhandles it as a requirement of long-run business success.Therefore, it is nothing but strategic management concept.Just like the invisible hand and the hand of thegovernment doctrines [30] it locates corporateresponsibilities regarding sustainability into the rules andincentives in which the modern corporation is embedded.It gives priority to the economic performance contrary toother

expectations (unless these expectations have anegative effect on efficiency) [44]. Instrumentalstakeholder theory does not offer a normative basis ascompared to shareholder theory [13] since it emphasizesstakeholder demands as a tool for enhancing shareholdervalue. Therefore, the concept faces several limitationsregarding its contribution to sustainability. These are theproblem of sustainability instruments of high marginalcost and low marginal revenue [40] [16] [19], theproblem of powerless stakeholders [40] [27] and theproblem of common pool resources [19]. Furthermore,"slowly unfolding stories that deal with scientificuncertainty, such as climate change and biodiversity lossare not given as much attention by the media." [6] As aresult the instrumental management of stakeholderdemands may not handle such events – which to ourpresent knowledge vital from the aspect of sustainability.Eventually, there are serious shifts in time and spaceamong the causing of environmental effects, theirdetection and the development of effective solutions [10].If environmental effects are irreversible and are of highinertia, and certain crucial ecosystem-services areirreplaceable, the precautionary principle should be givenhigh priority – and not the economic aspects, as ithappens in the case of instrumental stakeholdermanagement.

B. Ecocentric management

The concept of ecocentric management [34]emphasizes the need for the radical rethinking ofcorporate management activities and the dominantmanagement paradigm, based on the risk-society thesis[42]. According to this thesis risk damages people andnature systematically and often irreversibly. As long asearlier nature meant the main risk for societies and theirmembers, today risk's main source is human activity.These risks are the results of political, economic, socialand organizational decisions. Risk is not caused by humanirresponsibilities regarding these decisions but rather theirunforeseeable and unintended side effects. Therefore, thesource of risk is not carelessness but scientific andtechnical knowledge [9]. "Unlike the risks of earliercivilizations, modernization risks are rooted inecologically destructive industrialization and are global,pervasive, long term, imperceptible, incalculable, andoften unknown." [34] Furthermore, economic growth isconfronted with ecological limits in western societies.According to these radically changing circumstancesthe optimization of production variables - such as profits,productivity, jobs, and growth – is not anymore sufficient.Risk variables - such as product harm, pollution, waste,resources, technological hazards, and worker and publicsafety – should also be managed. Therefore, it is notenough to extend the traditional management paradigmbut it is necessary to radically rethink it, since it wasdeveloped to industrial societies. There are four commonbasic assumptions of modern organizational theory whichlimits their applicability to risk societies [33] [34]:

- Denatured view of the environment.
- Production/consumption bias.
- Financial risk bias.
- Anthropocentrism.

According to the concept organizations are the systemsof inputs, throughputs and outputs. They harm theenvironment with each of their organizational processes.Since organizations are parts of the ecosystem theorganization-environment relationship has to be totally"reconsidered" in management theory. "The environmenthas been described as a bundle of resources to be used byorganizations. The emphasis is on understanding bothhow environments influence organizations and howorganizations can procure, exploit, or compete forenvironmental resources. The reverse relationship—howorganizations have an impact on their naturalenvironment—has received little attention." [34]

Therefore we have to reevaluate our responsibilityboth toward humanity and nature when greeningorganizational theory. Four opportunities are defininggood returns, shifting the orientation from the currenteconomic orientation to an ethical one, acknowledgingnature's independence and recognizing nature's goodness[33].

C. The "Really Responsible Company"

The theoretical basis of the really responsible company(RRC) concept [16] [17] is rooted in Schumacher [12].According to the concept it is a serious mistake to speakof sustainable growth instead of sustainable development.The crisis of our age can not be handled anymore as itused to be handled earlier. It is not enough that everyone– e.g. companies – take small steps regardingsustainability issues. A more overthinked and deeperapproach is necessary. Responsibility can not bereconciled with profit since these two categories arebasically non-transformable into each other. Companieshave to enhance their efficiency, profitability andcompetitiveness, but these are not ends in themselves butminimal operational requirements. Therefore, thesevariables are not to enhance infinitely but these have anoptimal level. The goal is not profit maximization throughproducing cheap products of higher quality, but to createan economic system which no more exploits nature and ishumanized. We can speak of deep social responsibilitywhen companies do not chose business decisions whichare socially disadvantageous and economicallyadvantageous – such as expanding their activities incertain situations. This category of responsibility is a signof the radicalism of the approach since such type ofresponsibilities can not

fit into the presently dominanteco-efficiency centered paradigm.

Based on the above written corporate responsibilityhas five dimensions [16]. Since transportation places aneven higher burden on nature, it should be minimized bythe RRC. An RRC intends to be as close as possible to itsmarkets, workers and suppliers. Companies also have toplay a bigger role in reducing income inequities – whichis a basic criterion of sustainability, namely fairness. Theyat least should not contribute to the growth of inequities.However, unfairness in not a quantifiable category – justlike the other three following RRC dimensions. Wecannot determine its ideal level and face ethicaldilemmas, e.g. what should be the maximum difference inthe wages at an organization. Regarding "economism", itis extremely difficult to differentiate between the healthyand the harmful level of profits. The latter is"economism", which should be avoided by the RRC. TheRRC has to secure a respectful standard of living to itsemployees and owners but not necessarily even enhancedyield. Regarding sustainable company size, there is aconsensus among the experts of the traditionalmanagement paradigm that the larger company is moreresponsible. However, this does not mean that this viewholds true but rather attracts attention to the limits of theoperationalized definition of CSR. Tóth [16] thereforeformulates the "irresponsibilities of scale" hypothesis.The sustainable company size can not be normalized andthe author admits that he himself has only pale estimatesregarding it – it is probably somewhere around 100-500workers. The last dimension of the model is the productof the company itself. Its sustainability is again not anobjectively answerable question. First, according to ourpresent knowledge we are not able to define any set ofsustainable products. Second, the sustainability ofproducts can not be determined universally.

D. The non-profit sustainability concept

Just like in the case of the RRC the basis of the nonprofitsustainability concept (NPSC) [28] also takes offfrom Schumacher [12]. According to the concept modernsociety is on its way to destroying both the natural and thesocial world. As a result of the absence of higher motivesor principles the profit motive takes the place of oldermotives. It becomes the core characteristic of modernsociety. It appears both at the level of personalpsychology and of the economic institution. Therefore,the failure of the modern society is the failure of the profitmotive.

The profit motive as a core characteristic leads to asociety committed to continuous economic growth.„Modern society, then, present us with a yield equation ofterms: Self interest ♉ Profit Motive ♉ Growth." [28].At the same time economy is the part of the ecosystemwhich is closed, finite and non-growing. A non-growingecosystem can not have an infinitely growing subsystem.Therefore, the traditional economic motive has to bereplaced by something else in order to create a new,sustainable economy.

This requires new institutional structures. One ofthem is a maximum wage that is a ratio of the minimumwage. This is an instrument for reducing economicincentives and income inequities. The second one is thestatutory transformation of all companies into non profit.In this way each enterprise becomes similar to the NGOsof the present and follows other motives than profit.Accordingly, based on these different motivationsentrepreneurship activity and technological change aremotivated only or primarily by environmental or publicinterests. Then we have: Common good → Non profit → Sustainability.

III. CORPORATE SUSTAINABILITY AND PARTICIPATION

We may draw several conclusions regarding thecriteria of CS based on the above introduced concepts.First, CS – just like macro-level sustainability – can notbe described unambiguously by rationally quantifiableand universal criteria. Second, serious doubt can be raisedregarding the positive and sufficient sustainability effectsof the incremental correction of the present economicstructure, management paradigm and practice.Convincing arguments can be raised that the presenteconomic structure, management paradigm and practice –and also consumer preferences - has to be radicallychanged in order to reach sustainability. However, webasically do not have empirical knowledge about theconcrete sustainability effects of any forms of such aradical change. Eventually, we face uncertainty whentrying to define the "borders" of the sustainablecorporation.

Therefore, participation has a prominent role whendefining the criteria of a sustainable organization – justlike in the case of defining the criteria of macro-levelsustainability. One reason for that is that participation hasin itself a value in sustainability [31] [37] and well-being[2]. Furthermore, discourse ethics and the rationality ofprocesses comes to the front instead of instrumentalrationality when facing uncertainty [18] [5]. Finally,participatory processes mean a democratic chance tochange present unsustainable preferences [32].

Companies may contribute to social participation atleast two ways. First, they can themselves participate ininfluencing certain socioeconomic processes. Second,they may consider their stakeholders' interest whenmaking corporate decisions [31]. In the last part of ourstudy we briefly examine the latter, namely corporatestakeholder management among a certain group ofHungarian companies. While the theoreticalunderpinnings of

the stakeholder approach and thediscursive approach „are quite different, their practicalapplication leads to similar results. The idea is to identifythose stakeholders who are affected by a decision and toallow them to participate in the decision process." [5]

IV. STAKEHOLDER PRESSURES AMONG HUNGARIAN ISO 14001 CERTIFIED COMPANIES

In the last section we briefly introduce thepreliminary results of our empirical research carried outamong Hungarian ISO 14001 certified SMEs. Ourresearch focused primarily on small- and mediumenterprises (SMEs). Our main aim was to identifysustainability-related stakeholder pressures SMEsexperience from their stakeholders.

The qualitative phase of our study included 8 personalsemi-structured interviews with SME managers from theSouthern Great Plane Region of Hungary. Our interviewstructure was developed based on Matolay et al.'s [36].The quantitative part includes a survey of 66 HungarianSMEs. Our survey was developed on the basis of Konradet al.'s [1] stakeholder-matrix which aims to mapstakeholders' sustainability expectations as perceived bythe managers of multinationals.*A. Qualitative results*According to our qualitative data we conclude thatthe interviewed managers do not meet any "classical"sustainability pressures from their stakeholders, excludingthe implementation of the environmental managementsystem. Our results are not surprising since it is evenmore common in the literature that SMEs' socialresponsibility and their role in sustainability is not seen inimplementing the best practice CSR and sustainabilitymethods of multinational companies – which we called"classical" earlier. These methods are non-applicable forSMEs since SMEs are from a lot of aspects structurallydifferent from multinationals [22] [23] [3]. Their socialand sustainability role is rather seen in contributing tosocial capital [46] [47]. Among stakeholder (and mutual)expectations we found several values – e.g. calculability,security, trustiness, righteousness and fairness – which arekey values from the aspect of social capital and show thatSMEs in Hungary potentially also contribute to socialcapital.

B. Quantitative results

Our quantitative results somewhat differ from thequalitative ones (unfortunately we do not have a chance togive a detailed analysis of our results here because ofspace limits). Here managers had to classify differentstakeholders' expectations on a five-grade scale (see table1-3).

TABLE 1: EMPLOYEE EXPECTATIONS AS PERCEIVED BY MANAGERS

Top 5 expectations			
	N	Mean	Std. Dev.
Providing secure, long-run employment for the employees	62	4,81	0,40
Securing the long-run existence of the business	61	4,49	0,87
Protecting local natural environment	59	3,95	0,88
Small favours for the employees	62	3,89	0,94
Waste reduction	58	3,84	0,99
Last 5 expectations			
Pass the company down to next generations of family (in case of family business)	43	2,14	1,34
Employing the disadvantaged members of the local community	59	2,07	0,87
Motivate employees to do voluntary work for local community goals	59	1,98	1,01
Supporting national sport, cultural and religious organizations	59	1,95	1,09
Supporting the disadvantaged people/groups of the country	58	1,86	0,94

TABLE 2: LOCAL COMMUNITY'S EXPECTATIONS AS PERCEIVED BY MANAGERS

Top 5 expectations			
	N	Mean	Std. Dev.
Protecting local natural environment	55	4.18	1,00
Correspond to local community norms/values	57	3.70	1,12
Protecting national natural environment	54	3.67	1,18
Supporting local sport, cultural and religious organizations	57	3.58	1,13
Doing something for the local community above its expectations	54	3.54	1,27
Least 5 expectations			
Small favours for the employees	57	1.77	1,09
Securing participation opportunity to corporate decisions	57	1.74	0,95
Securing the long-run well-being of the owners	56	1.68	1,03
Pass the company down to next generations of family (in case of family business)	40	1.58	0,98
Flexible working hours for the employees	56	1.43	0,83

TABLE 3:CONSUMER EXPECTATIONS AS PERCEIVED BY MANAGERS

Top 5 consumer expectetions			
	N	Mean	Std. Dev.
Securing the long-run existence of the business	57	3,35	1,33
Protecting national natural environment	52	3,10	1,26
Contributing to the solution of global environmental problems	52	3,06	1,29
Protecting local natural environment	54	2,98	1,25
Waste reduction	52	2,87	1,36
Last 5 consumer expectations			
Securing participation opportunity to corporate decisions	57	1,65	1,08
Supporting the disadvantaged people/groups of the country	53	1,60	0,88
Supporting national sport, cultural and religious organizations	53	1,58	0,89
Small favours for the employees	57	1,49	0,83
Reducing income inequities within the firm	55	1,47	0,88

Value one meant that the given aspect is not at allimportant for the given stakeholder, while value fivemeant the opposite.As we can see, the most important employeeexpectations are connected to long run secure workplaceand local environmental issues. Also, from the threeexamined stakeholder groups employees have the highestlevel of expectations towards the companies. The localcommunity's expectations are connected to local issuesand their level is generally lower than employees'expectation. Eventually, consumers have generally thelowest level of expectations and these are mainly relatedto environmental issues.

V. CONCLUSIONS

In our paper we introduced four paradigms ofcorporate sustainability. We concluded that because ofscientific uncertainty regarding the criteria of asustainable corporation - and also because the need forchanging unsustainable present corporate behavior andconsumer preferences - participation has a prominent rolewhen defining the sustainable corporation. Namely,stakeholder expectations gain distinguished importancewhen judging any organizations sustainability. Ourempirical study among Hungarian ISO 14001 certifiedcompanies came to contradictional results. According toour semi-structured interviews companies do notexperience strong sustainability needs from theirstakeholders. On the other hand, employees, localcommunity and consumers all have importantsustainability (environmental) demand according to ourquantitative data.

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Corporate Social and Business Performance

R. Matolay, Á. Wimmer
Corvinus University of Budapest (CUB), Institute of Business Economics, Department of Decision Science,
Fővám tér 8. H-1093 Budapest, Hungary
E-mail: reka.matolay@uni-corvinus.hu

***Abstract*: A detailed analysis of academic literature on performance measurement in and around CSR is provided introducing tendencies, fundamental topics of the theoretical and empirical work in the field.**

I. INTRODUCTION

Our paper is based on an extended inquiry and analysis of the academic literature on measuring social and business results of Corporate Social Responsibility (CSR). In our ongoing research a variety of academic journals have been carefully selected from three major fields, both theoretical and empirical articles related to performance aspects of CSR have been collected through searches according to pre-tested search terms. Specific characteristics of the literature have been explored. Our research interest in exploring the academic literature can be depicted by a two-way approach. If performance management journals and CSR journals can be understand as two bodies of literature, then how these directions are related to each other?

1. What are the specific characteristics of CSR literature in relation with business performance? What topics and factors are perceived to be central or key issues? How business orientation is depicted? What aspects of (measuring and managing) business performance are included and how?
2. What are the specific characteristics of business and performance management, accounting and controlling literature in relation with CSR? What aspects of social responsibility are included (CSR, environmental performance, stakeholders etc.)?

II. THEORETICAL BACKGROUND

First major critics concerning performance measurement practices dates back in the 1980s. Then the dominance of financial measures, lack of relevant information about operating performance and service level, timing of information, information being aggregated and distorted too much at the same time, lack of analysis of causal factors and interactions have been the major sources for criticism. Generally performance measurement was viewed as being control-oriented instead of supporting decisions. In the 1990s new performance measurement frameworks, development of cost and management accounting methods and practice have taken place. More accurate cost information and analysis (activity-based costing and management, total cost management, target costing, life-cycle costing etc.) have been included, while more emphasis were given to non-financial performance measures (operating measures, customer satisfaction etc.) and to the analysis of different levels/aspects of performance (operating, market, financial performance). This period gave birth to the *multidimensional performance measurement frameworks* (e.g. Balanced Scorecard, quality management tools as EFQM). Another major characteristic of 1990s relevant to our research is the intention to translate strategy into action, and to understand (financial) consequences of decisions (e.g. shareholder value network) [1].

The late 1990s faced a „new crisis" in performance measurement. Besides the problem of information proliferation (overwhelming and irrelevant information and report, the issue of routine versus relevancy) a new stream of thought has become stronger: i.e. the claim to have more *emphasis on stakeholder relations and processes,* thus introducing new dimensions that are favourable from a social responsibility point of view. Looking beyond shareholders and customers, other than usual dimensions of performance entered the picture (see e.g. performance prism) [2]. *New interpretations of value creation (shareholder value, customer value, stakeholder value etc.)* have become part of the literature.

III. RESEARCH METHOD

The study on academic literature regarding corporate social and business performance is embedded in a four-year research at the Department of Decision Science, CUB. The research project – financed by the Hungarian Scientific Research Fund (OTKA, No.: K68769) – aims at exploring the trends of CSR in Hungary. Major research topics involve corporate and business drivers for CSR as well as the outcomes and impacts of CSR activities for a wide set of stakeholders, including owners, shareholders, business partners. The study to be presented at EMAN conference is a complete analysis in itself, it is not only an autonomous research though, but also a contribution to the local empirical study by providing a theoretical background and framework for it.

In this specific research journals of the related fields have been mapped systematically. 17 journals were selected and elaborated intensively according to a set of keywords. Preliminary research and experience in performance management, business ethics and CSR helped us formulating the research process.

Journals of three "fields" have been selected. Since one of our research objectives is to explore the nature of CSR-CSP approaches of diverse management fields, we have been focusing on journals of different terrains. Besides examining journals primarily oriented to business ethics, CSR and sustainability, we have also pursued an inquiry in academic management and

business journals, plus in journals focusing on performance measurement and accounting. By studying the 'general' performance measurement and management literature our goal was to figure out relevant aspects and factors where these fields may 'communicate' with and provide input to each other. The following journals have been investigated:

CSR-focused periodicals:

Business and Society Review, Business Ethics: Oxford, Business Ethics Quarterly, Journal of Business Ethics, Journal of Cleaner Production

Academic management and business journals:

Academy of Management Journal, Academy of Management Review, Business Horizons, California Management Review, European Management Journal, Harvard Business Review, Long Range Planning, Organization Studies

Accounting focused journals:

Accounting, Auditing & Accountability Journal, Accounting Forum, Accounting, Organization and Society, The British Accounting Review.

Most of the journals have been reviewed since their inception, in some cases this period was limited by the availability constraint of the online databases.

In exploring the content of the journals two sets of search terms have been combined. We have included a wild range of terms and expressions from the CSR field and also from the field of accounting and performance management. Search terms have been pre-tested. Extended or alternative terms have provided further hits in case of some search terms, but the comparison of the lists of articles has revealed double listed articles on the on hand, and irrelevant hits on the other. Finally, number and diversity of search terms have been reduced to the following ones:

CSR-oriented search terms:

social responsibility

(Business) performance-oriented keywords:

performance, business performance, financial performance, competitiveness

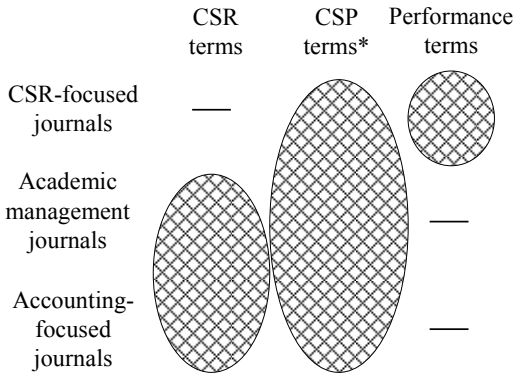
Social performance-oriented keywords:

social performance, triple bottom line, social responsibility and performance, social responsibility and competitiveness.

In our research the search terms have been adopted to the three sets of journals in a different way. CSR-oriented search terms do not yield reasonable output in CSR-focused journals. Consequently, the terms of a given field have not been used (on their own) in the journals of the very same field, instead of that a cross-search of terms have been implemented.

Interestingly, terms used very often in a CSR business context proved to be rare in the academic contest. Search term "triple bottom line", for example, has brought only 28 articles into the light, most of the published by CSR-focused journals. Looking at performance terms, competitiveness is a term and topic being attractive not only in the management, but also in the CSR literature.

TABLE 1: SEARCH TERMS RELATED TO JOURNALS



* By CSP (corporate social performance) terms we understand not only social performance, but also the searches when social responsibility and performance terms have been combined

Search terms were looked at in title, keyword, and abstract fields. The following table provides information about the two search terms revealing the most numerous "hits" in the journals.

TABLE 2: DISTRIBUTION OF ARTICLES

Keywords Type of periodicals	"social per-formance"	"social responsibility" and "performance"
CSR-focused periodicals	87	141
Management journals	36	67
Accounting journals	69	8
Sum	192	216

IV. MAJOR OUTCOMES

Common characteristics and major focuses of the related literature are summarized below. Besides introducing the key topics of the three sets of journals, we pledge special attention to topics were performance is discussed in relation with a wider range of stakeholders.

The focus of accounting journals is basically on issues of reporting. Topics include not only accounting policy and practice (related to social accounting methods and frameworks), but also the specific motivators of managers for engaging in these techniques. A stream of literature specializes on topics of external relations and communication with investors. The main issues are:

Reporting and accounting frameworks, policy and practice

- from environmental reporting to sustainability and CSR reporting;
- social accountants' efforts to change existing business and accounting practice, see e.g. [3];
- objectivity of information on environmental and social performance.

*M*otivators (formal and informal) driving social reporting, and socially responsive decision making

Investment issues: socially responsible investment (SRI), as well as relation and communication with investors, e.g. financial responsibility (budget holders

responsibility for overspends), or SEER (social, ethical and environmental reporting) between companies and their core institutional investors, as evolving area of corporate communication, with a potential to support mutual understanding and reveal mutual benefits [4].

Relationship of performance and reporting, impacts of publishing environmental, social etc disclosures, stock market consequences of environmental performance information: the way how publicity (either good or bad) on environmental performance affects share prices.

The goal and the role (and also the impact) of social reporting are more and more often analysed. The goal of performance measurement is frequently identified as contribution to ongoing stakeholder dialogues, the practical experiences are mixed though. Despite the increasing number of major companies proclaiming their social responsibility credentials and producing substantial environmental, social and sustainability reports, Cooper and Owen critically evaluates the degree of institutional reform, designed to empower stakeholders, and thereby enhance corporate accountability. They concluded that both forms of disclosure offer little in the way of opportunity for facilitating action on the part of organizational stakeholders, and cannot therefore be viewed as exercises in accountability [5].

Academic management and business journals have a much wider focus concerning strategic issues of corporate responsibility as a driver of performance, as well as the communication issues. The discrepancies or deficiencies of social reports and communication (imperfection, narrow focus and/or lack of support for the dialogue with stakeholders) are frequently criticized, as well as the question of trust is raised. Regarding strategic aspects main issues are as follows:

Development of CSR (theoretical and empirical aspects) e.g philosophy of CSR and CSP, divers approaches and critics, the role of social efforts in corporate strategy and corporate success. The strategic evolution of CSR and the challenges of "strategically practicing CSR" and "strategic corporate responsibility" raise the question of how to understand and present the impacts of social initiatives.

Causal relationships and performance drivers: substantial volume of empirical studies concern relations of (CSR) strategy and (financial, business) performance from different angles. Mixed results are shown with regard to the question of: can corporate social responsibility (CSR) be a source of business performance, competitive advantage, value creation (etc.)? Another stream of researchers are to understand the impact of corporate social reporting on firms' (social, business or financial) performance. The mixed results themselves provide contradicting impacts. Szekely and Knisch stress that many managers are not yet convinced of the validity of the argument about profitability of CSR efforts, because of the most sustainable development initiatives have been developed in isolation of business activity and are not yet directly linked to business strategy. They propose to strengthen the link between the two is to measure the extent to which a company's performance increases as a result of implementing sustainable development initiatives [6].

Another thread of management thinking refers to the challenges of performance management in the mid-1990s. Than the question of "How to translate strategy into action?" came into the forefront [7], now the very same question has gained new content in the CSR field. Here – among others – Epstein and Roy emphasize that an increasing number of senior managers recognize the importance of formulating a strategy on CSR, however they often find it difficult to translate the strategy into action. They present a framework for the more careful understanding of both the drivers of social performance and the impacts of that performance on the various corporate stakeholders, permitting better integration of that information into the day-to-day operational decisions and the institutionalisation of social concerns throughout the organisation [8].

Concerning *information aspects*, the challenges of *measurement* (as a tool of decision support, supporting a better understanding the impacts, as well as a tool for justification of CSR and/or (internal and external) *communication* have also heavily appeared. Measurement and communication needs are reciprocal: stakeholders are more and more demanding information about corporate responsibility and social performance, and on the other hand, firms seems to be more willing to involve stakeholders in measuring their own corporate social performance.

Level of social reporting, communication: by this we mean both quality, credibility and extension of reporting and communication. Most of the findings show that firms' disclosure is currently restricted to specific CSR themes, like operational efficiency, maximum safety, environmental protection, quality and innovation, open dialogue, skill development, and responsible citizenship. As a normative suggestion checklists for measuring and assessing public responsibility performance are also published [9].

International aspects of communicating corporate social performance: Global versus local disclosure, information released through corporate social, environmental and sustainability reports in different countries [10], [11].

Role of managers, organizational structure: A substantial part of the articles discuss the positive and negative impacts placed on CSP by the decision-makers and organizational structures.

CSR and business ethics oriented journals approach performance issues from the most diverse angles. Topics of distinct issues, such as reporting and investment are present in these journals too. Many – if not the most – of the theoretical writings have been published in these journals. A significant difference between these journals and the other two sets is the normative style. Substantial part of the articles is written in a prescriptive way. On the other hand, these journals are the source of most of the writings criticizing and questioning even the possibility and relevance of measuring CSP.

V. CONCLUSION

As a tendency of the past decades the meaning of business performance has been broadened, the tools and

equipments of performance management have been enriched. In its style multiple aspects have gained momentum. Challenges of measuring corporate social responsibility are – to some extent – similar to those questions arisen in the field of performance measurement the 1980s and 1990s. A shift toward the inclusion of stakeholders interests can be depicted, eventhough it is usually limited to (one-way) communication. “Reports alone provide little value if they fail to inform stakeholders or support a dialogue that influences the decisions and behaviour of both the reporting organization and its stakeholders” [5].

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Importance and challenges of measuring supply chain CSR

Juha-Matti Katajajuuri[1] and Sari Forsman-Hugg[2]
[1]MTT Agrifood Research Finland, Biotechnology and Food Research, FI-31600 Jokioinen, Finland
[2]MTT Agrifood Research Finland, Economics Research Luutnantintie 13, FI-00410 Helsinki, Finland
E-mail: juha-matti.katajajuuri@mtt.fi

***Abstract*: There is a wide variety of theoretical approaches to define corporate social responsibility (CSR) but there is a little research and debate on whether and how to measure CSR. Measuring CSR is of utmost importance since only by measuring CSR issues a company or supply chain can develop and manage its CSR practices and to improve its corporate social performance. Without giving meaningful, open and measurable CSR content companies are acting arbitrary. This paper takes a critical view on the measurement challenges especially from the supply chain point of view and presents some concrete examples on how to proceed with measurement of supply chain driven CSR.**

***Keywords*: corporate social responsibility (CSR), sustainability, measure, indicator, supply chain**

I. INTRODUCTION

Companies are increasingly improving their sustainability activities and adapting corporate social responsibility (CSR) strategies. There is a wide variety of theoretical approaches and concepts to define corporate social responsibility (CSR) and sustainability [1, 2, 3]. The widely accepted approach to CSR and sustainability is based on the traditional triple bottom line with three dimensions: economic, social and environmental responsibility [4]. However, most of the dimensions of CSR and sustainability lack consensus on relevant and usable criteria and indicators. Furthermore, there are no operational methods to measure CSR or sustainability from their real and substantial point of view. Especially, the social dimension is still in its early development phase [cf. 5, 6].

Measuring CSR is important to develop and manage CSR practices of companies. By measuring their CSR practices companies can proof that their have put their CSR values into real actions and what is their contribution to sustainable development. CSR indicators and information could also be utilised in stakeholder and consumer communication. Furthermore, CSR content should be meaningful, open and measurable. This challenge and related problems is discussed in the following chapters.

Global reporting initiative (GRI) has presented that companies have to report any key CSR issues which are taken place in any part of their supply chain. Companies are increasingly taken initiatives to develop their CSR actions in order to improve their corporate social performance (CSP), or that's it may looks like. We may ask, for example, how many meat industry companies do report on animal welfare issues in their CSR reports.

CSR in business strategy debate has largely concentrated on the environmental dimension of sustainability. Measuring CSR has its roots in environmental accounting and reporting. The efforts to implement and measure sustainability practices at the company level, let alone the supply chain level, have been scarce [7]. It is a challenging task to develop a set of both quantitative and qualitative indicators that can be used to measure all the three dimensions of CSR. There is especially a lack of comparative, sector-specific and empirical studies [8]. Development of CSR measures in the supply chain context requires a common definition and content of CSR. However, different concepts and perceptions on CSR disables the measurement of CSR.

The aim of this article is to critically discuss about measurement challenges of CSR placing a special emphasis on the supply chain point of view. The paper takes a theoretical and philosophical view on challenges of measurement of CSR. Because of the supply chain focus, a strong emphasis is on life cycle thinking and life cycle sustainability assessment (LCSA) covering also social and economic aspects of sustainability [5]. An approach to CSR measurement is mainly normative, that is, how the CSR practises should be measured in order to promote companies to make CSR improvements in the most relevant issues from the life cycle perspectives.

II. IMPORTANCE OF MEASURING CSR

Measuring CSR is of utmost importance since only by measuring CSR and sustainability a company or supply chain can develop and manage its CSR related practices and to improve its corporate social or sustainability performance. It is strongly questioned whether current or planned practices and operations of companies are in accordance with sustainable driven ways of doing [9]. Well-established CSR indicators provide different stakeholders a possibility to assess whether companies do have improved and advantaged their CSR practices and put their values into real actions. In addition, they provide companies a tool to compare their CSR impacts over time, to compare results with their objectives set and to benchmark a company against others.

In order for a product to be produced in responsible way requires that the entire supply chain takes account of the unwanted impacts of its actions

on the society. Production of a certain product item usually includes several raw material supply chains and many subprocesses taken place in several companies. Taking food supply chain as an example, it is often primary production that has the highest contribution to the sustainability of the product, for example environmental impacts of agriculture being relatively high compared to other steps of entire chain [10]. Cumulative information on sustainability issues through the entire supply chain is a necessity to provide consumers holistic information to compare sustainability and CSR of various products and services [cf. 5, 11].

If companies focus on CSR impacts generated only by them, large company efforts may result in relatively small improvements in the entire supply chain due to the fact that CSR impacts of the supply chain are often dominated by some other supply chain stages as presented above from environmental perspective. Supply chain CSR approach also makes it possible for companies to state what they expect from their business and supply chain partners [11]. To convince importance of specific process or supply chain step from the sustainability point of view measurable and commensurable indicators of CSR are needed.

Without giving meaningful, open and measurable CSR content, it can be stated that companies are acting arbitrary. In the worst case, they are utilising selectively some company level strengths to improve their image while there might be quite obvious problems related to the other operations of company or operations of its supply chain.

III. CHALLENGES OF MEASURING CSR – SUPPLY

It is a challenging task to develop a set of both quantitative and qualitative indicators that can be used to measure all the three dimensions of CSR. CSR is a normative concept which means that it cannot be measured by means of absolute measures (cf. the concept of sustainability). However, it is questionable, if one can or should measure CSR at all [12]. To understand the complexity of indicators, we refer to Clarkson, that CSR indicators have normative connotations lacking clarity and specificity and have the disadvantage of sounding like jargon. "Responsible to whom?", "Responsible about what?", "Responsibility performance judged by whom and by what standards?": These are legitimate questions to which business people have not received satisfactory or meaningful responses. Understandably, they have resisted attempts to make them responsible for social issues that they do not perceive as corporate or business issues [13]. CSR can only be anchored in the organisation if those involved can develop a meaningful concept of CSR [14] and build more concrete content to it [15]. Only by building meaning and content to CSR it can be measured. The key challenge, in practice, is how to measure CSR, in such a way that it really takes account of different challenges and demands of society and stakeholders, and that through stakeholder dialogue arbitrary actions and decisions would be avoided.

In the process of determining CSR criteria and their indicators, openness and transparency is of utmost importance because of two reasons. First, the criteria and their indicators should be transparent, which means they have to be publicly available and assessed by any stakeholder. Second, the criterion and their indicators have to be in such a form that it both requires and motivates companies to publish more relevant CSR information. This is important also due to the fact that indicators cannot be measured exclusively in absolute terms.

A prerequisite for CSR indicator building is that companies in the supply chain report more CSR information than is currently reported including negatively sound issues from company point of view. Based on that information a company should set explicit objectives to develop its operations measured by a specific CSR criterion and corresponding indicators.

From the motivation perspective, it is important that a company itself can set these specific indicators. In addition, since the companies (size, production structure etc.) can be different in the same industry, uniform quantitative objectives is difficult unless impossible to set. Reporting of company-specific objectives and how these objectives have annually or during specific time period been achieved makes it possible for different stakeholders to evaluate relevance of the CSR objectives, practises and development of the companies. Increased public CSR information enables and promotes dialogue between company and its stakeholders, which in turn contributes to identifying relevant CSR issues and objectives for improvement.

As an example of above mentioned principle could be that company reports annually climate change impacts of its operations per main products. Correspondingly, company should start activation of supplier chains to produce and generate respective data on other life cycle steps, and report on the progress. Furthermore, after couple of years the same company should be able to report on climate change impacts of the main products based on the entire supply chain. Company should also set specific objective to decrease climate change impact, both in company and supply chain level, and report also on this procedure. This is of course area where business secret perspective has to be considered. For example, in many sectors climate change impacts correlates with energy use, which can be seen also as a strategic competitive and key cost factor. Sometimes companies do prefer aggregated

emissions and impacts in communication, and from this reason a detailed approach as presented here might be challenging for companies, but needed from transparency and CSR communication point of view.

Commensurateness of CSR indicators between organisations would make comparisons much more easily than currently. Other level of commensurateness is different dimensions of CSR. First, how to identify all relevant CSR dimensions? And second, how we could valuate these different dimensions? What are their weights in relation to each others? And to what extent different CSR dimensions are or should be linked or integrated with each other? One approach could be that environmental and social impacts would be measured as monetary values.

Relevance of indicators is significant. For example, packaging (e.g. materials used, overpacking, household waste) has been raised many times as one of the most environmentally harmful issue in society and media. To meet the demand of public, companies do report development of packaging, with aims to decrease material intensity per products. However, for example in the case of food products the contribution of food production to environmental impacts is significantly higher than contribution of package production and recovery [16]. If the packaging material is used for example too little and a product is tainted, the amount of product waste is increased and total environmental impacts are increased.

Currently, consumers, for example, are not well informed about this fact. Furthermore, this also means that research scientists should be involved to stakeholder dialogue. Related to this a relevant question is also who should participate in defining the content of supply chain CSR, which addresses the significance of stakeholder analysis, and more specifically, how to put stakeholder views in supply chain practices. Moreover, constructing the content of CSR in the supply chain is particularly difficult because the actors in the chain, including consumers, have not necessarily uniform understanding of what CSR basically means. CSR in the food chain is a multidimensional issue, which often involves conflicting interpretations between different chain players or stakeholders and conflicting values especially between the economic responsibility and other aspects of responsibility [17]. One could also ask, whether universal criteria, which are agreed by all relevant stakeholders, could ever be developed for CSR.

Constructing a commensurable set of indicators for CSR is made difficult by the fact that CSR is dynamic rather than an absolute concept, which objectives and perspectives evolve and change over time. Finally, is it enough that companies are reporting these issues. Do stakeholders trust the CSR information generated and provided by companies themselves? Do we need some parties or organisations that should verify the CSR information provided by companies?

Unfortunately, current company level CSR reports do not tell very much if at all how responsibility is constructed in the everyday operations of the company –not to say anything about the supply chain perspective.

One slight problem in company CSR reports is that companies tend to bring out, quite selectively, the positive aspects concerning the company. Furthermore, it is impossible to assess the responsibility of the entire production chain based on CSR reports of single companies.

A key motivation to promote the measurement of CSR comes from consumers. Consequently, they need to be better informed about supply chain CSR. Some consumers and citizens would like to have an access to information on all parts and stages of the production chain, not only on the quality and price of the final product. They would like to know, for example in the case of food production, about the origin of the raw material, animal welfare, and working conditions of farmers and staff of food companies. Some reflect on how fair and justified the distribution of income in the food chain is, while others are concerned about pollution and the environment. The possibilities of consumers to make ethical or responsible food choices are, however, quite limited, because suitable information for this from the entire supply chain point of view is not available.

In addition that measuring CSR is of utmost importance, it would be desirable in the future that there would exist commonly accepted measures, that is, there is a shared understanding on what and how should be measured. Widely accepted and utilised CSR measures enable comparisons between different products, companies and supply chains as well as in relations to objectives set. From the consumer point of view the most uncomfortable situation would be, if companies launched their own indicators, for example, a carbon footprint in the product package, that would based on totally different and non-standardised modelling and calculation methods and principles.

IV. DISCUSSION

Based on the supply chain focus and LCA approach the paper critically considered the complexity of CSR measurement and discusses and summarises the principal requirements and starting points for determining the supply chain CSR indicators. One of the principles suggested by the paper is that instead of being absolute figures, CSR indicators could be ones that help companies to make improvements on the key CSR issues in the chain. Instead by providing indicators with absolute

figures, the measurement model should motivate companies themselves to set measurable objectives, for example, to minimise environmental impacts or to improve labour welfare. In addition, these objectives should be in the public domain, which enables stakeholders to assess whether companies have contributed to their corporate social performance..

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What kind of business is Corporate Social Responsibility? A brief view of the Hungarian practices

Evelyn Erdélyi
Budapest University of Technology and Economics (BME)
Mûegyetem rkp. 3-9., 1111 Budapest, Hungary
E-mail: erdelyi.evelyn@tik.u-szeged.hu

I. INTRODUCTION

In Hungary, greater and greater emphasis has been put on expressions, such as, Corporate Social Responsibility (CSR), responsible corporation, ethical corporation and environment-conscious corporation in the life of organizations, in the past couple of years and it has also been a topic in electric media for about a year now. Unfortunately, however, there are still some who are unaware of what lies behind these expressions. There is a tendency to use CSR wrongly as a synonym for charity practise, sponsoring or PR.

In the first part of my paper, I present the theoretical background of Corporate Social Responsibility. I present that usually in social sciences more definitions and more types of schools deal with this question. Among others, I present Milton Friedman's, Kotler's and others' concept in connection with CSR, the EU definition of CSR and the Triple Bottom Line (TBL) expression. I would like to give an overall picture about what is CSR and what kind of business is CSR in Hungary so I am examining the followings:

- What kinds of periodicals, books have been published and do they, as printing products, follow
- what is written in them?
- What kinds of applications and what amount have
- been announced in civil sector?
- What kinds of conferences, trainings have been held in connection with this topic in Hungary and what is the difference or similarity between the 'normal' and 'CSR' conferences, trainings?t.

II. WHY DO WE HAVE TO TALK ABOUT CSR?

In the past couple of decades our environment and our societies have been going through dramatic changes. We can tell that mass media announce threatening news in connection with 'the end of the World' in almost every second. Global warming, lack of drinking water, gradually growing population, unemployment, lack of food, natural disasters, crisis of energy and we could continue our list. These are such problems, which could not be solved by the governments themselves.

Multinational enterprises have much higher responsibility in solving of these global questions, mainly because some of them have higher GDP than certain countries. Of course, other participants have to take part in solving of global problems like small and medium-sized enterprises, entrepreneurs, NGOs and last but not least the people themselves. To make the Earth be the living place of the following generations in the oncoming centuries, everybody has to find their own responsibility and role in this issue.

To talk about Corporate Social Responsibility (CSR), it is very important to go back to its historical background and clear its definitions. Let us start with Sustainable Development.

III. SUSTAINABLE DEVELOPMENT

When we talk about CSR, we can often hear the expression of Sustainable Development or Sustainable Growth. Unfortunately, the latter expression is used wrongly. Herman E. Daly explained in his article entitled 'Sustainable Growth: An Impossibility Theorem' that Sustainable Growth was such a wrong oxymoron which could not be applied to the economy. 'To grow means 'to increase naturally in size by the addition of material through assimilation or accretion.' To develop means 'to expand or realize the potentialities of; to bring gradually to a fuller, greater, or better state.' When something grows it gets bigger. When something develops it gets different. The Earth ecosystem develops (evolves), but does not grow. Its subsystem, the economy, must eventually stop growing, but can continue to develop. To delude ourselves into believing that growth is still possible and desirable if only we label it 'sustainable' or colour it 'green' will just delay the inevitable transition and make it more painful' [1].

A best known definition of Sustainable Development was created by the Brundtland Committee in 1987 according to which 'Development is what meets the needs of the present without compromising the ability of future generations to meet their own needs'. If we want to understand the definition, we can see that the corporations have to take responsibility in economy, society and environment. This is called the 'Triple Bottom Line' (TBL), and we got to the definition of CSR [2].

IV. CORPORATE SOCIAL RESPONSIBILITY

The modern debate on CR originated in the USA, where it started with the appearance of an article entitled 'The Social Responsibility of Business Is to Increase Its Profit' by the Nobel Prize winning economist Milton Friedman, in 1970. He clearly stated that any company should decline to deal with issues which do not belong directly to its core mission of maximising shareholder value, or more simply, increase profit. [3] Although some still think that Friedman was right, most of the 'voices' say that companies should not just deal with their profit. We can note that already in the 1970's researches were carried out in connection with ethics and responsibility of a company in the United States, which were followed by Western European researches within a very short time [4].

The most basic and usable CSR definition was created by the European Union in the Green Paper issued in 2001. According to this definition, CSR is 'a concept whereby companies integrate social and environmental concerns in their business operations and in their stakeholders on a voluntary basis' [5]. Who are these stakeholders? They are in temporary and mutual connection with the organisation, for example, shareholders, employees, local communities, NGOs, consumers, suppliers, competitors, authorities, etc.

According to the WBCSD (World Business Council for Sustainable Development), 'Corporate Social Responsibility is the continuous commitment of a business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large' [6].

According to Gergely Tóth, in his book entitled 'The Truly Responsible Enterprise', the CSR definition is the followings. The truly responsible enterprise

- 'sees itself as a part of the system, not a stowaway concerned only about maximizing its own profit;
- recognises unsustainability (the destruction of natural environment and the increase of social injustice) as the greatest challenge of our age;
- accepts that according to the weight they carry in the economy, governments and enterprises have to work on solutions;
- honestly evaluates its own weight and part in causing problems (it is best to concentrate on 2-3 main problems) and
- takes essential steps – systematically, progressively and in a focused manner – towards a more sustainable world' [7].

In case we examined the concept of CSR on the level of countries, we would find different definitions. For example, in France and in Germany, CSR is about the questions regarding labour relations and human resources while in Great Britain it answers to the social needs and in the USA, companies say 'the profit first only then good cases'.

If we examine CSR according to the size of a company, we can find different definitions, too. According to the results of a Hungarian research, the keywords of CSR for small companies are the followings: protection of national product, fair prices, taking care of consumers, fair salary, sensitivity to social problems, respecting the law, environment protection, surviving, innovation and profitability, while in case of enterprises the keywords are the followings: reliable product, salary enough for the cost of living, sensitivity to social problems, respecting the law, environment protection and profit [8]. The difference is not big, but it can be felt. In my opinion, both types of companies have their own responsibilities and do not use evasions.

By reading the book entitled Corporate Social Responsibility by Philip Kotler and Nancy Lee, we can find more definitions for CSR which contain similar elements to the ones mentioned above [9]. As it is shown, there is no uniform definition, we can find different drafting in the special literature but it seems that there is a unity in the basic principles. The company follows closely the effect of its activity on others and tries to change it so that it would have a positive effect on the society. This includes environmental responsibility thus CSR adjust well to TBL theory. Volunteering is an important element, that is, companies not only meet the requirements of legal measures and laws, but they go beyond them.

V. WHAT DOES CSR MEAN TO ME?

I believe the definition closest to me on corporate level is used by Gergely Tóth. I think it is important that a company takes responsibility for its activities and its stakeholders, surroundings. CSR should be an inner need for making the world better and not an obligation coming from outside and thus getting to a strategic level influencing the processes of a company. Being responsible to me means not wasting water, not using electricity unnecessarily not only at home but at my workplace, too. I take my surroundings into consideration, I do not buy useless products and if it is possible, I buy Hungarian products and I try to make others think and act in the same way.

In the second part of my paper, I would like to introduce what kind of business is CSR in present Hungary. First of all, let us see what kind of periodicals, books have been published.

VI. BOOKS, PERIODICALS

In case we have a look at how responsible a book, a brochure or periodicals dealing with a socially responsible topic is, it is worth looking at the following standpoints:

- What kind of paper is used?
- What kind of printing ink is used?
- What is the press like – does it have ISO 14001 or EMAS certificate?
- How is it distributed?
- In what way can advertisements be placed in it?
- Is it accessible electronically?

Unfortunately, I have not found answers to these questions in most of the cases so I had to be content with the visual impression.

The picture is very variable, but the initiations are encouraging. More than five books in Hungarian on more than 1000 pages have been published within the last two or three years.

VII. APPLICATIONS

In the last period there have been more and more applications which were related to Sustainable Development and CSR. As part of the New Hungarian Development Plan, the National Development Agency advertised more applications in this subject in 2008. For example, KEOP – 6.1.0 and KEOP – 6.2.0, which can together provide more than 1.600.000.000 Forint. Both of them are for promoting sustainable way of living, behaviour and consuming habits [14]. The Eco-school Application is also remarkable, which was presented to more than 270 schools until 2007. The AmCham advertised the Second Sustainable Management Educational Scholarship into which application lectures can be entered for developing the existing CSR courses or launching new ones for 250-500.000 Forint. The KÖVET Association for Sustainable Economies also advertises applications for Environmental Saving Award or Green Office Award, etc.

VIII. CONFERENCES, EVENTS

As a conference and event manager, I often see that the environment-conscious behaviour of our Congress Centre (and now I am just talking about the visible items, for example, selective waste collecting, some notes in our toilets, etc.) is very likeable for the future partner. (Once we had an offer in which the organizers required the venue to run selective waste collecting.) Unfortunately, the environment-conscious behaviour is not the main condition to choose venue for the conference organizers, but there are some initiations in connection with responsible conference and event organizing in Hungary. In the past two or three years, there have been about fifteen relevant conferences and other events in CSR. For instance, CSR Management 2007: Dialogue, Marketplace, Conference; Enterprise for the Sustainable World Conference series; KÖVET annual conferences, , etc.

The Conference named Corporate Climate Change – the effect of the climate change on the companies and the answer of the business sector to this challenge (25th October 2007) was the first CO_2 free conference in Hungary. The organizers took the use of the electricity in the lecture room, the entertaining of the participants as well as the transportation of the participants to the venue into consideration. They counted the whole CO_2 emission in connection with the organizing of the conference and they neutralized it with the help of one of the projects of the Hárskuti Renewed Energy Centre. Beyond this, the KÖVET does not prepare any printed invitations only electric ones. Lectures are not printed for the participants as they can download them from their website. If they print, they use recycled paper. They choose the venue consciously: there has to be natural light, the possibility to air without air conditioning, etc. 'At smaller events they tried fair-trade- or organic buffet.

It has got a good message, but there are only few catering companies who can solve it in a professional way.' – told Tóth-Baltási Péter to me, who is the event organizer.

TOP 200 Gala of 'Figyelő' newspaper contained similar elements, where the programme booklet was made of recycled paper, in which eleven NGOs could introduce themselves. The purpose of this list was to call the guests' attention to their activities and co-operational possibilities. Besides these, energy saving bulbs, recycled decoration elements and paper furniture were used during the gala. The ingredients of the gala dinner, mainly organic products, were purchased from local growers. The guests could also taste fair trade coffee and sweets [15].

Summer University Training for the Future 2008 organised was about the CSR as well. Choosing the venue was already very important as it was held in the Family Elementary School in Keszthely, which is an alternative entrepreneur. We, the participants were accommodated at the local camping site and our means of transport was the bicycle. During the six days we went for a longer journey three times by bicycle, which was a very good recreation for all of us.

The summer university proved that training could be organised in a simple and responsible way.

What other events does the CSR appear on?

It might be surprising that CSR has reached the festival market, too. SZIN Festival in Szeged in 2008 was organised with regards to environment-conscious behaviour and CSR. We could meet selective waste collecting, returnable beer glasses, biologically broken down cutleries, free cycle parking lot and rickshaw taxi. The Festival gave places to the Park of Equal Opportunities and Eco-village, where several NGOs were represented [16].

IX. CONCLUSION

From the answers given to my questions, it turns out that CSR is not only a business of enterprises. In my paper, I present that independent from sectors, the size of a company or forms of organizations, more and more people and organizations deal with this field. As shown above, more and more periodicals, associations, books, applications and event organizers deal with CSR. The question is if it might mean a new opportunity to increase the competitiveness of Hungary. According to some researches, the managers agree on the fact that CSR ensures better financial results in the long term so those who take no notice of CSR might lag behind. I hope that more and more people, organizations, companies will be involved in this topic and CSR is going to gain strength.

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The benefit side of environmental activities on the balance sheet

Hajnalka Ván
University of Szeged, Kálvária sgt. 1, 6722, Hungary
E-mail: van.hajnalka@eco.u-szeged.hu

***Abstract*: Environmental management accounting (EMA) focuses much more on the cost side of environmental activities, than on their benefits. Environmental benefits are often regarded as reduction in costs only or some very limited opportunity for creating revenues. The profitability of environmental activities is a very important question for firms, though. My paper aims at collecting the typical benefits of environmental activities in a scheme and analyzes their connection with the balance sheet.**

***Keywords:* environmental accounting, benefit side, balance sheet,**

I. INTRODUCTION

Mostly environmental costs stand in the focal point of EMA, together with their possible connection to past environmental damage or prevention of such risks. That is, environmental costs are differentiated among the following categories: waste and emission treatment, prevention, and environmental management, material purchase value of non-product output and processing costs of non-product output. The benefit side, on the contrary, is often limited to account for environmental revenues (subsidies and other earnings) [1] [2] [3].

Environmental costs appear on the assets and liabilities side of the balance sheet. The assets may be fixed assets, as the capitalisation of environment related investment costs, or current assets as the major potential collector of stocks related to the environment. Any change in inputs/outputs of the material flow would certainly influence the level and composition of stocks. On the liabilities side, provisions and the accounts payable may hide environment related information [1]. Provisions may embrace uncertain liabilities, determined by the law, and the accounts payable related to environmental issues.

The present paper seeks an answer to the following questions:

- How can we grasp the benefits of environmental projects?
- Do benefits take the same place on the balance sheet as costs?

II. BENEFIT SIDE

My review of the relevant literature demonstrated that the benefit side is mentioned only in some cases. Related concepts include Schaltegger-Burrit's idea (2000) [4], who, first of all, defined environmentally induced benefits. "Such benefits include environmentally induced additional revenues […] and reduced costs" ([4] p. 95.). These benefits can be divided into direct and indirect elements. Direct revenues include measurable factors, like gain from sales of recyclables, increased volume of sales and higher prices for the products sold. Indirect elements are less tangible, for example, image, increased customer satisfaction etc., although this book focuses on the environmentally induced costs.

The approach of United Nations Division for Sustainable Development (2001) [1] is similar to the above-mentioned concept. It distinguishes subsidies, awards and other earnings. The first pillar embarks tangible (direct) effects, while the second comprises less tangible ones. However, focus falls on the cost side.

In Japan, the government requires the submission of a report on the environmental effects, benefits and costs too. Beside the "environmental conservation cost" there is a distinction of "environmental conservation benefit" and "economic benefit associated with environmental conservation activities" ([5] p. 3.). "Environmental conservation benefit" is measured in physical units like prevention, reduction etc. "Economic benefit associated with environmental conservation activities" means profit for a company, and is measured in financial terms. It is a better-expanded scheme differentiating between actual and estimated benefits, but its basic emphasis is on measurement.

The last concept that I would like to mention was conceived by Csutora M. (2007) [6]. This paper combines environmental benefits with the evaluation of natural resources. Its main innovation lies in displaying less tangible elements in this scheme too, and providing a possible measuring method.

In summary, EMA concentrates on the cost side, and the benefits can only appear as benefit from cost savings.

In the present paper, my emphasis falls on the benefits of a company's business operations and not the positive effects of the environmental activities on the external environment like customers, natural environment etc. It is similar to the "economic benefit associated with environmental conservation activities" defined by the Japanese Ministry, although I also deal with measurable and less measurable benefits.

In this relation, the question of what environmental benefits are also arises. These benefits originate from environmental activities, have positive effect on the company, one part of these can be evaluated by using monetary and/or physical value too, and the majority is probably less tangible, only predictable or immeasurable.

To sum up, we must differentiate between tangible and less tangible benefits of environmental activities. Positive effects can easily be calculated for cost savings of environmental projects such as reduced costs due to decreasing level of pollution, etc. [4] [5]. On the other

hand, estimation and measurement can easily run into difficulties for customer attraction, good image, good relationship with authorities etc. [6] [7]. Apparently, benefits are in much more complex relationship with the balance sheet than costs.

III. The processes within a company

Accounting refers to the measurement of economic events as well as summarising and reporting them in the form of financial statements for use by the stakeholders. Reporting is the ultimate function of accounting. The so-called input-output process represents the main business recycling process in a company. This process is generated by three factors: the financial, product and production/service providing process [8] (Figure 1). There exist financial elements in the background of every process, since profitability is the main goal of an economic company, and this process embraces the whole company. A company can focus on production or service providing, which ensure its operation. The third category connects products to sales, also complementing the process by marketing and PR elements among others. Of course, acceptable operations also require other additional processes like human resources, administration etc.

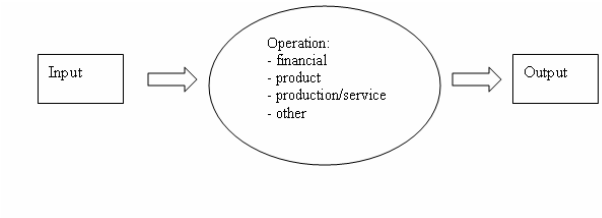

Figure 1: Processes within a company

Parallel with these processes, benefits deriving from environmental activities can also be grasped. This method ensures that not only the measurable elements, but also the ones falling outside accounting transformation can be calculated as environmental benefits.

IV. Benefit side and the balance sheet

My paper is focusing on environmental benefits hidden in the balance sheet. I have collected those benefits in a scheme and arranged them along four categories: process benefits, product benefits, financial benefits and other benefits. Of those categories, only product benefits and financial benefits appear on the balance sheet directly.

Process benefits originate from the realignment of the process within the company. Product benefits can be revealed through stocks analyses. Financial benefits indicate positive effects on the fiscal side, although they are not easy to identify on the balance sheet. The other category of benefits contains less tangible benefits.

We can organise tangible, as well as less tangible benefits into these four categories.

It is possible to draw up a summarizing table (Table 1) along these double dimensions (tangible-intangible, process, product, financial and other benefits).

Firstly, financial benefits contain the cases that have an effect on financial processes. In a well-established system, it is easy to assess the benefits deriving from sold recycling materials as subsidies for a wastewater operate plant etc. The other focus falls on the lower level of taxes, fees, due to the environmentally friendly technology. The above-mentioned benefits have positive effect on financial processes, while provision and insurance have negative effects on it. According to my opinion, provisions may ensure the financial arrangement of an accident. Apparently, financial benefits embark generally measurable elements, but human cost reduction due to better working conditions may prove less measurable [9]. Better working conditions mean lower migration, which reduces training expenses or saves coaching time. However, this factor is only estimated and not concretely measurable.

The financial benefits on the balance sheet can on the one hand appear in an indirect way, in the profit and loss account as increased revenues, or decreased expenditures, which means the increased or decreased retained earnings. On the other hand, it can appear directly in the provision, although it is not a stock but a flow indicator.

The realignment of the production/service providing process can exercise a positive effect in the firm. The tangible part can be ensured by better utilisation of materials, for example, lower amount of materials or energy produced in-house etc. This has positive effects on the price of products too. The less tangible part is the information of environmental management system that generates more rational decision-making, reliability and flexibility.

Process benefits on the balance sheet can appear as the improving figures in the stocks (materials flow accounting) and in the retained earnings influenced by revenues and costs. Process benefits are also mentioned in the literature in many cases.

Product benefit contains benefits from the sale of environmentally friendly products and saved raw materials. Furthermore, it can also boost the sale of other products exercising a multiplier effect.

These benefits can appear on the balance sheet in the stock or indirectly in the retained earnings.

As the table shows, the other benefits can contain more elements than the previously mentioned three categories. Within this category, we can distinguish benefits related to human resources, the company and surroundings. Better working conditions can make human workforce more reliable and efficient. The company can receive awards due to its environmental activities, the number of accidents can decrease, which can lead to fair evaluation. The connection with stakeholders can improve, while customers, authorities or competitors' trust can also increase. These elements can appear on the balance sheet in a complex way, that is, in the form of fixed assets like good will or can be hidden in retained earnings. In many cases measurement only means an estimation, while statement is not easy for a company either, however, it exercises positive effects like flexibility in operations, quicker processes in terms of administration, permissions etc.

The above-described scheme explains that benefits are hidden in the balance sheet, and a very detailed system is necessary to assess them. Companies can complete the figures with notes that may include such elements although it is not standardised.

V. Further Considerations

The conventional accounting system aims at identifying, measuring and communicating economic information. Its most important task is to create the measurable elements of assets and ensure a better comparison among annual reports. Environmental management accounting aims to integrate environment related cases into the system [10]. The question lies in whether it is possible to identify, measure and report environment-related costs, assets, revenues with the methods of conventional accounting.

In this system, we cannot measure the less tangible benefits; however, we can evaluate their role in the value-creating strategies, although in other cases it is not possible. This idea is similar to the problem of displaying intangible assets on the balance sheet. There are some indicators to measure these assets, but it is a very slippery area [11] [12].

Sustainability has become one of today's most frequently used terms included in virtually all documents. I believe that these research fields should develop a closer cooperation in order to build up a stable and well-established system. For example, a new concept emphasizing sustainability is also formed in regional development theory. Based on this new concept the pristine natural environment for recreation and ambiance is more important than the old concept (attempting to acquire roads, industrial parks etc.) [13] [14].

VI. Conclusion

The estimation and measurement of the advantages of environmental projects is more difficult, uncertain, and costly, than cost valuation. In spite of that, it is important to do due to its positive effects on the company and the society.

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TABLE 1: BENEFITS OF ENVIRONMENTAL ACTIVITIES ON THE BALANCE SHEET

Benefits	Quantitative	On the balance sheet	Qualitative	On the balance sheet
Financial	Earnings from the sale of materials for reuse and recycling	Retained earnings	Lower level of human workforce cost	Retained earnings
	Financial subsidies, awards	Retained earnings		
	Lower level of environmental fees, taxes, charges	Retained earnings		
	Provision/insurance for damages	Provision, Retained earnings		
Process	Effective resource utilization	Stocks	More rational decision-making	Hidden in retailed earnings
	In-house electricity production	Stocks	Environmental management system	Hidden in retailed earnings
	Lower level of production cost	Retained earnings		
Product	Sales of environmentally friendly products	Retained earnings	Multiplier effect	Retained earnings
	Saved materials	Stocks		
Other				
Human resources			Healthier workforce	Hidden in retailed earnings
			Better employee moral	
Company			Symbolic awards	
			Marketing advantages	
			Reduced risks, accidents	
			Fair evaluation	
			Avoided damages because of insurance	
Surroundings			Green image	Fixed assets
			Better reputation	Fixed assets
			Good customer relations	Hidden in retailed earnings
			Good relationship with authorities	
			Good relationship with competitors	
			Better public trust and confidence	

Corporate Environmental Reporting in the Czech Republic and its Relation to Environmental Accounting at Macro Level

Iva Ritschelova*, Egor Sidorov*, Miroslav Hajek**, and Jiri Hrebicek***
* Jan Evangelista Purkyne University in Usti nad Labem, Horeni 13, 400 96 Usti nad Labem, Czech Republic
** Ministry of the Environment of the Czech Republic, Vrsovicka 65, 100 10 Prague, Czech Republic
*** Masaryk University, Zerotinovo nám. 9, 601 77 Brno, Czech Republic
E-mail: ritschelova@rek.ujep.cz

***Abstract*: This paper is a country study for the Czech Republic giving the notion of the contemporary situation in the field of voluntary and mandatory environmental reporting and future developments with the focus at linking the micro and macro environmental accounting and reporting.**

I. INTRODUCTION

Corporate environmental reporting belongs to a multidisciplinary area concerning technical, social and economic sciences. Environmental reporting seems to significantly contribute to sustainable supply chain management and creation of additional competitive advantages in the contemporary business. Environmental accounting and reporting also have a significant role at the national level since they contribute to management of the sustainable development of the society. These impacts however do not seem to be fully realized in the Czech Republic. The development process of environmental reporting is being stimulated as by *voluntary* incentives (generally those naturally occurring in the business sphere) as well as by *mandatory* motivators usually in the form of legislative tools. The available statistics show, however, that the existing system of incentives for business is not sufficient to widely implement environmental management systems and furthermore prepare the environmental reports. This reflects the lack of the governmental support among others. The paper shows the state of the art in the field of contemporary environmental reporting in the Czech Republic and maps the existing system of incentives stimulating economic agents to get involved into environmental reporting providing the link between the national and business levels. In the end, the practice of *environmental protection expenditure account* (EPEA) construction is described as an example of linking micro and macro environmental accounting data.

II. ENVIRONMENTAL REPORTING IN THE CZECH REPUBLIC: ESTIMATING RESULTS OF VOLUNTARY EVOLUTION

Environmental reporting as an inseparable part of sustainability reporting has become a popular discussion topic in the academic and consulting spheres during the few past decades. The majority of literature sources stresses the advantages of additional sustainability reporting that can help firms to improve their relations with the core stakeholders, establish sustainable supply chains and therefore to create additional value of their business. These motivations may be called *voluntary* since the businesses realizing them may or may not get involved into additional reporting activities.

The developments in the field of environmental reporting in the Czech Republic reflect the overall global trends [2]. The available statistics show that through all objective benefits the environmental reporting can bring to businesses, the existing motivation is not sufficient to make this a normal business practice as compared to the financial accounting and reporting. On the one hand, some large corporations are actively performing environmental reporting initiatives; on the other hand, the relative share of these companies is rather small.

In the middle of 2005 a research focused on environmental reporting [3] was performed by the Czech Environmental Management Centre (CEMC) and the Czech Environmental Information Agency (CENIA) financed by the Ministry of the Environment (MoE). The sample included 224 companies (26 % small, 37 % medium and 35 % large, the rest did not state the number of employees). During the research 53 % of companies stated that they either issued or were planning to issue in the near future regular reports containing environmental information. 36 % of companies proclaimed that they were issuing environmental reports on regular basis, 15 % were periodically publishing environmental reports along with the report on safety and protection of health at work. Three percents of respondents stated that they were issuing sustainable development reports.

As one can see, the environmentally focused non-financial reporting activities of Czech companies are not quite extensive. Furthermore, these activities are not regular in number of cases since several firms stated that they had published reports only once. Number of companies, however,

publish environmental reports on the regular basis either yearly or once in several years.

We assume that if the company has an environmental management system (EMS), then the environmental data and information are being monitored, codified and registered. This fact indirectly indicates that in the case of such need the company is able to aggregate these data and incorporate it into the environmental or sustainability report.

According to the existing business practice the environmental management systems are usually being established in accordance with the requirements of ISO 14001 or EMAS. The development trends of these systems in the Czech Republic are provided in the TABLE 1.

By the end of 2007, around 84 % of the companies that have implemented EMAS were represented by medium and large entities with over 50 employees.

TABLE 1: NUMBER OF ISO 14001/EMAS CERTIFIED COMPANIES IN THE CZECH REPUBLIC (SOURCE: CENIA – EMAS AGENCY)

Year	2000	2001	2002	2003	2004	2005	2006
ISO 14001	113	186	366	605	1125	2122	2211
EMAS	4	4	9	10	15	14	25

Among others EMAS requires that the company should prepare environmental reports and statements as for internal as well as for external stakeholders. It is possible to assume that companies that have already established EMAS are regularly performing environmental reporting activities. However, it is necessary to state that EMAS is not so popular and common among the Czech companies compared to ISO 14001 due to stricter requirements and higher administrative burden.

Considering only companies with ISO 14001:2004 (that represents around 90 % of all ISO 14001 certificates in the Czech Republic[2]) the following distribution is apparent: almost 30 % of certified companies belong to manufacturing industry, 27 % represent construction industry and the third biggest group (15 %) represents real estate, renting and business activities. Among the leaders in the manufacturing industry one can name manufacture of electronic and optical instruments and devices (around 30 %), manufacture of basic metal and fabricated metal products and manufacture of machines and equipment (around 20 % each).

As one can see, ISO 14001 is more common in the Czech Republic: on 26.5.2008, there were only 28 companies with EMAS compared to over 2 200 companies with ISO 14001 in the beginning of 2007.

The TABLE 1, however, also turns out to be relatively small in comparison with the overall number of companies in the Czech Republic: for instance, according to the information of the Czech Statistical Office by the end of 2007 the number of non-financial companies with more than 20 employees was more than 23 thousand. All above-mentioned facts show that quite a low number of companies are being involved into EMS implementation and connected environmental reporting activities.

Based on the available statistics one can conclude that along with number of obvious advantages that the non-financial reporting is capable to provide, there exists number of barriers that prevent companies from implementation of sustainability reporting initiatives [4]. Among the most important barriers in the Czech Republic one can mention unrealized benefits for companies from reporting, the lack of personnel and financial resources, insufficient knowledge, as well as lack of governmental support among others. In particular, it is the insufficient support of environmental accounting and reporting initiatives from the government that should be revised and improved in future, since in addition to purely business-motivated development the environmental reporting practices may get a significant role as a source of data for national statistics that in its turn supports the decision-making at the national level.

II. 1. WHAT STIMULATES THE DEVELOPMENT OF ENVIRONMENTAL REPORTING IN THE CZECH REPUBLIC?

The following text describes the system of normative, economic, educational and voluntary motivations stimulating companies to get involved into environmental reporting activities presently existing in the Czech Republic. Each motivator provided in the text obviously to the certain extent contributes to the overall institutionalization, acceptation and development of the environmental accounting practices. The presence of the elements of environmental accounting in the company consequently makes the environmental reporting quite a feasible exercise in case of such need. Therefore, all the further mentioned motivators either directly or indirectly support the development of environmental reporting.

II. 1. 1. MANDATORY MOTIVATORS

As it has been stated an important role in institutionalization of the environmental accounting and reporting belongs to the mandatory requirements that force companies to introduce the environmental accounting practices, register, store, and report the respective data. Mandatory tools enable a relatively quick introduction and establishment of required behaviour patterns. This however does not necessarily mean that these requirements should be positively accepted in all cases by business environment and bring the initially intended results. Obviously, it is necessary to combine available administrative tools with other ways of motivation,

[2] Source: http://www.iso.cz

particularly with information dissemination and support of voluntary activities.

One of the mandatory tools directly connected with the environmental and sustainability reporting in the Czech Republic is law No. 25/2008, *on integrated environmental pollution register* and on integrated system enabling environmental reporting duties performance. This law incorporates the requirements Directive No. 2008/1/EC of the European Parliament and of the Council on *Integrated Pollution Prevention and Control (IPPC)*. According to this law in order to collect data within the pollutant releases and transfer register companies are required to identify, evaluate, register and report to the MoE emissions and transfers of 93 substances in case their quantity is above the defined limits.

For instance, the Czech Integrated Pollution Register[3] in 2007 contained information on 1080 facilities releasing and/or transferring polluting substances during the year 2006. In comparison data on almost 980 facilities, representing approximately 600 companies is available for the year 2005. According to the latest review available in 2005 the 50 % reports were received from facilities in agriculture (their cumulative share on pollution however is quite insignificant). Those were followed by facilities representing electricity, gas and water supply that sent 14 % of reports and finally manufacture of basic metals and fabricated metal products (6 %). The majority of facilities (64 %) reported air emissions; waste transmissions were reported by 29 %. The rest of reports concerned water emissions and wastewater transmissions.

The companies have the right to label the substance identifying data as a commercial secret (with exception of air, water and ground emissions). In this case, the data may be specified only for administrative bodies. In all other cases, the MoE publishes classified data only in aggregated form. This practice significantly decreases the transparency of reporting activities. Furthermore only chosen companies have the reporting duty: i.e. only those exceeding the "reporting threshold" (e.g. in case of carbon dioxide emissions it is 100 thousand tonnes yearly).

However, in accordance with IPPC number of companies has explicit information on emissions and connected payments. Evidently, this information can be directly used within environmental reporting activities. In addition to that, companies have further reporting duties according to number of further national environmental legislation. For instance law No. 185/2001 *on waste* stipulates the reporting duty for the firms producing more than 50 kg of hazardous waste or over 50 tones of other waste. According to the law No. 86/2002 *on air* companies are required to measure emission volumes and report these data on regular basis. The reporting duty is additionally stipulated concerning water, natural resources, hazardous chemical substances, etc.

In 2003, the Directive 2003/51/EC of the European Parliament and of the Council on the annual and consolidated accounts of certain types of companies, banks and other financial institutions and insurance undertakings[4] (the so-called *Accounting Modernization Directive*) also consistent with Commission Recommendation No. 2001/453/EC of 2001 on the recognition, measurement and disclosure of environmental issues in the annual accounts and annual reports of companies was published. In the Czech Republic, the provision for requirements of Directive 2003/51/EC is made in law No. 437/2003, on accounting, stipulating, that annual report of a company should contain financial and non-financial information about environmental activities. According to the above-mentioned research of 2005, [3], 44 % of companies stated that they published or were planning to publish environmental information as a part of annual report.

International Financial Reporting Standards (IFRS) explicitly state that at present in addition to financial statements number of enterprises provides further reports (e.g. environmental reports) and that these reporting initiatives have nothing in common with standard financial reporting activities. However, to the extent IAS/IFRS framework is capable of covering the environmental issues (e.g., expenditures incurred because of fines and penalties for non-compliance with environmental regulations and compensations to third parties, etc.) the annual reports should be consistent with the requirements of the standards. According to EC Regulation 1606/2002 on the application of international accounting standards, starting from 2005 number of European companies should prepare their accounts in conformity with the International Accounting Standards (IAS). According to the Czech law No. 437/2003 respecting this regulation all companies quoted on stock exchange should prepare their accounts in conformity with IFRS. Non-quoted companies may use IFRS for consolidated reporting aims, all the rest are not allowed to use IFRS in their accounting practice. Therefore, the certain elements concerning environmental reporting are being incorporated within the international financial reporting standards.

[3] See http://www.irz.cz

[4] The Directive amends the IV and the VII directives focused at financial reporting and consolidated reporting concerning among others environmental information and closer coordination of environmental and financial reporting. According to it the reporting information should not be restricted to only the financial aspects but also should lead to presentation of environmental and also social aspects necessary for an understanding of the company's development, performance or position. However, due to the developing character of non-financial reporting and traditionally limited resources of smaller economic agents the member states may allow these companies not to include non-financial information.

Environmental reporting is also closely connected to registration of chemical substances activities according to REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) — a European Community Regulation (EC 1907/2006) on chemicals and their safe use. It is expected that by 2020 due to REACH activities only those chemical substances that have known properties and are safe for environment and health will be used[5]. However, the REACH connected legislation and implementation initiatives has met a strong criticism in number of member states coming from both business circles (due to increasing administrative and financial burden) as well as environmentalists (due to possibilities of avoidance and insufficiently strict criteria). In summer 2008 the president of the Czech Republic had declined the novelized law on chemical substances that had explicit REACH-oriented concept reasoning his step by extraordinary burdening consequences for business and debatable benefits of the law. Evidently the future development of these initiatives will be a result of a political consensus.

II. 1. 2. INSTITUTIONALIZATION OF EMS

In accordance with the *National Sustainable Development Strategy* and *National Environmental Policy* of the Czech Republic the voluntary activities aimed at improvement of environmental situation, implementation of environmentally friendly technologies, eco-design, eco-labelling, etc. are being supported. In this respect environmental reporting practices are particularly connected with implementation of EMS in accordance with EMAS or ISO 14001.

The voluntary Eco-Management and Audit Scheme (EMAS) was introduced in 1993 by Council Regulation (EEC) No 1836/93, which was revised in 2001. This fact distinguishes EMAS from ISO 14001, which in its turn is not explicitly supported by legislation. The Czech Republic has introduced this regulation in 1998 by a government resolution No. 651 as a *National EMAS program* that was consequently updated in 2002 [6]. After accession of the Czech Republic to EU, it has been also using regulation No. 761/2001 of 2001.

Since 2006, EMAS is fully compatible with the requirements of standard ISO 14001:2004. This has been established by the Commission Regulation (EC) No 196/2006, which contributed to the full harmonization of both EMS. However, ISO 14001 is a somewhat less exacting environmental management standard, that doesn't require environmental reporting activities among others. If the company acquires EMAS registration and certificate it automatically fulfils requirements of ISO 14001 standard, the opposite case however is not true.

The Ministry of Industry and Trade (MIT) has established the institutional framework for EMAS verification and certification. In order to support the development of systems of environmental accounting and reporting at the company level the MoE has introduced an Environmental Management Accounting Implementation Guideline in 2003 that was conceptually based on [1]. The guideline provides definitions and requirements on monitoring of single environmental costs, revenues, and on material and energy flow balance.

One should mention several economic motivators developed by the government in order to support the establishment of environmental management systems in the companies. This is particularly a financial aid for EMS certification. For instance, the MIT provides a financial grant to small and medium enterprises (SME) covering 50 % of consulting service expenditures connected with either ISO 14001 or EMAS establishment. The support is being also provided on the territorial bodies' level (e.g., Prague, or Vysocina region) that also provide financial aid to SMEs involved into EMS certification process. The economic agent may also apply for financial support within the framework of different operation programs of EU structural funds [6].

Based on available statistical information one can state that having an option to choose between ISO 14001 and EMAS the companies choose the easiest way. ISO doesn't require initial environmental review, does not require environmental statement (that is directly stimulating the environmental reporting), doesn't assume the mandatory registration and connected control of the company by state authorities, etc. These may be some of the reasons why companies prefer ISO 14001 over EMAS. One of few reasons for choosing EMAS is a law No. 137/2006 on public purchases that mentions EMAS among the possible criteria of evaluating competitive offers. This may be the reason why 33 % of the firms that established EMAS in the Czech Republic represent the construction sphere.

The Czech Republic is one of the leaders among the new European states according to the percentage of companies with certified environmental management systems (both EMAS and ISO 14001). Furthermore, the Czech Republic's position in this rating is quite comparable with such highly developed states as Denmark, Spain, Italy, or Finland. However, the figures witness that the share of such companies among the small, medium and large business agents is quite insignificant. Under these circumstances, it is hard to call environmental

[5] EU manufacturers and importers of substances will be obliged to submit a registration for each substance manufactured or imported in quantities of 1 tone or above per year. However, extensive exemptions exist in case of substances adequately regulated by other legislation (e.g., medical goods) as well as in case of low-risk, natural and some other substances.

management and respectively environmental accounting and furthermore environmental reporting a "normal business practice".

The MIT is planning to translate the Global Reporting Initiative (GRI) G3 guidelines[6] to Czech language. The G3 Guidelines are the cornerstone of the GRI Sustainability Reporting Framework and it is recommended they be used as the basis for all of an organization's annual reporting. The MIT takes several other active steps in promoting the voluntary reporting initiatives [4].

III. ENVIRONMENTAL REPORTING AND NATIONAL STATISTICS

As an important source of micro-level business-specific data, environmental reports have a great potential to be used out of the business circles. Reporting environmentally related information may be critical for the sustainability management at the macroeconomic level, since the non-financial reporting initiatives may provide valuable information for decision makers at different levels. The use of business accounting data in the conventional system of national accounting may be a good benchmark for establishing the same information links within the system of environmental accounting at micro and macro levels. An example of such integration is an existing practice of collecting data for Environmental Protection Expenditure Account (EPEA), which will be discussed later.

Business accounting covers the significant part of agents actively interacting with the environment. In case the environmental accounting system is implemented, the company accounts may contain a well-structured, regular and relevant data. The rationales for using business environmental reports for macro-level environmental accounting purposes are obvious. First of all, the business reports may provide information not available elsewhere. Next, data may be used as benchmarks and control points for evaluation of data received from other sources. Using business data enables to reduce expenses on the special statistical researches, this however, may increase the reporting burden placed on business.

It is quite obvious that coordination should be facilitated in order to direct the development trends, support the implementation and use of the best practices and provide tool for maintaining sustainability on both macro and micro levels in the end. The coordinating role can be partially performed by the state authorities. In case the data from the environmental reports is intended to be used for national statistics and policy-making the certain system of incentives and standards should be provided by the state institutions. The mix of standards and incentives on the one hand should motivate companies to get involved into environmental accounting and preparation of environmental reports and on the other hand should provide the common framework in order to make these reports complete, informative, comparable and useful for further aggregation and statistical analysis.

For significant number of business entities the reporting burden will increase since not every business has an established system of environmental accounting and reporting at present. However being an appropriate benchmark the financial accounting wasn't always a natural activity for business as it is nowadays and initially it was mainly motivated by the regulatory actions. Given the vital importance of sustainability-aimed actions on both macro and micro levels just as in case of financial accounting, the environmental accounting has a similar potential to become the common business practice in future.

Because of active motivation and coordination of environmental reporting initiatives, it will be possible to increase the quality and comparability of statistical information from the environmental reports. The standardization practice is ensuring the usability, comparability, scope and confidence of the information provided. The whole concept has some traits of win-win effects: the corporate sector will improve the relations with the wide range of stakeholders maintaining the transparent information flows and the state as one of he stakeholders will get a more complex and complete range of information for implementation of sustainability policy measures. National statistics will get wider access to ready-made data with necessary detail level, which is so critical from macroeconomic accounting viewpoint.

One may conclude that it is in the interest of the state represented by decision makers to coordinate the development process of a establishing practices of business environmental accounting and reporting by constructing an effective system of incentives and standards. The respective system of incentives existing in the Czech Republic is provided in the next part.

IV. EPEA: EXPERIENCE OF USING MICRO DATA AT MACRO LEVEL

In the Czech Republic, both state authorities and private institutions are producing various statistics. The certain economic agents have a so-called "reporting duty" which can be imposed by authorities in accordance with the respective Act 89/1995. In order to coordinate the reporting activities the Czech Statistical Office publishes the annual Program of Statistical Surveys. A particular reporting duty occurs when a business is officially invited to fill out the special reporting form at its own expenses. The number of strict internal rules for confidential data protection actions is being

[6] ttp://www.globalreporting.org/ReportingFramework/G3Guidelines/

developed in order to prevent individual data from being misused.

Among others, the Czech Statistical Office is carrying out the yearly survey *ZP 1-01 On environmental protection expenditures*. The survey is particularly focused at tangible environmental protection assets – acquisition expenditures, finance sources; non-investment internal and external costs and economic benefits of environmental protection activities. Additionally use of rights connected to natural resources, fees and environmental payments are being surveyed.

The reporting duty is being delegated to economic agents with preliminary agriculture and industrial activities, and of further branches, sewage sludge and solid waste disposal agents, municipality clean-up agents, municipalities with 500 and more inhabitants, state bodies, state funds, etc.

In order to complete the survey the company needs to have certain elements of environmental accounting implemented within its accounting system. So in order to receive the correctly completed questionnaire the statistical office representing the interests of the decision-makers as well as any other governmental institution should be also concerned about stimulating the companies to implement environmental accounting and reporting practices.

V. CONCLUSION

In order to establish the system of sustainability management at the macro level the decision makers need a good information base providing data for analysis, planning, monitoring, coordination and evaluation. The national and business statistics and accounting get one of the main roles in this process.

Today businesses follow the rules of a wide range of variable environmental reporting standards. The innovative character of process needs balance between regulation and voluntary activities. One of the stakeholders is state that is partially represented by national statistical offices, which actually prepare the information for decision making and monitoring the progress of the government actions. Using business environmental reports for national statistics purposes is quite natural practice. Since the two systems of environmental accounting may probably have different primary objectives, methods and tools the special coordination process is necessary in order to provide the compatibility of these two information systems. In this respect the harmonization activities in the form of voluntary standards development and law-based regulation may be powerful tools completing and reinforcing the voluntary initiatives taking place in the contemporary business society.

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Reporting on environmental issues in annual financial statements

Robert Langford
Sustainability Consultant, ICAEW Chartered Accountants' Hall PO Box 433 Moorgate Place London EC2P 2BJ Tel: +44 (0)207 404 2038
E mail: RobertLangford@London.com

Abstract: **The paper is intended to provide practical guidance for preparers of financial statements, auditors, directors of companies and users of annual reports. It is based on a project supported by the Environment Agency and the Institute of Chartered Accountants in England and Wales.**

The subject is addressed in three main sections, dealing with reporting requirements, implications for directors, report preparers and report users, and guidance for auditors. The format comprises a number of questions, each of which is followed by discursive text intended to inform and provide practical guidance. Key questions include:

- Which international or UK accounting standards, abstracts or interpretations are likely to be relevant to the treatment of environmental matters in annual reports?
- Which recent EU Company Law Directives likely to have an impact on the reporting of environmental issues by UK companies?
- Are there benefits in integrating environmental issues with risk management? What risk management techniques are available?
- Is the information provided in the annual report sufficient to enable a user to assess the financial impact of environmental risks and related opportunities? What information do users need?
- Does the auditor check whether the entity is complying with relevant environmental laws and regulations? What action, if any, is appropriate if the auditor becomes aware of non-compliance with environmental legislation?
- Do environmental matters introduce any unusual problems with regard to obtaining audit evidence?

Supporting appendices refer to the principal directives and regulations, international accounting and auditing standards relevant to environmental issues and provide examples of questions and procedures that an auditor may need to consider.

Examples, based on a survey of recent annual reports, illustrate disclosure relating to the topics addressed in the paper, such as environmental impacts and key performance indicators relating to:

- Risks and uncertainties
- Greenhouse gas emissions and emissions trading
- Site remediation and decommissioning liabilities
- Impact of the chemicals regulation and the WEEE directive
- Waste and landfill
- Resource use and recycling
- Supply chain performance

The paper recognises the value of reporting on environmental issues in annual financial statements, including business reviews and narrative statements such as operating and financial reviews. It also examines the use of indicators in measuring environmental performance and emphasises the business benefits of integrating environmental issues with risk management, thereby enhancing a company's profitability, reputation and relationships with employees and customers.

Whilst the paper is primarily concerned with the way in which environmental issues are reported in financial statements published in a UK context, it reflects the increasing impact of EU Directives as well as international accounting and auditing standards.

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The True and Fair View of Financial Statements In the Light of Environmental Information

Andrea Madarasiné Szirmai
BGF PSZF Kara, Accounting Department, Buzogány u. 10-13., 1149, Budapest, Hungary
E-mail: szirmai.andrea@pszfb.bgf.hu

***Abstract*: One of the key underlying assumptions in preparing financial statements is the going concern concept; a business will continue in operation in the foreseeable future. This concept can be one of the most important arguments why the environmental information should be presented, measured and disclosed much deeper, sophisticated and detailed way in the financial statement as it is done nowadays. In an extreme situation, non-compliance with environmental laws or regulations, material or non-material amount of environmental costs and liabilities may affect the continuance of an entity as a going-concern.**

***Keywords:* environmental reporting, environmental accounting, environmental management accounting, environmental financial accounting**

I. INTRODUCTION

ISO 14000 series, EMAS, GRI, sustainability reports, environmental reports: initiatives of key significance related to corporate-level sustainability. Such standards, systems, concepts and guidelines as well as reports built on these, whose common purpose is to analyse, regulate, measure and communicate the possibilities of sustainable development of companies. In summary: environmental and sustainability management accounting.

What do we mean by the concept of accounting? According to the generally accepted definition of accounting, it is an information system describing the operation and activities of business organisations. Its main function is to provide information, i.e. it is such a communication system, which ensures a common language for the communication of the players of economy. The definition, naturally, is way too general. My purpose is to analyse the definition in a narrower sense, and from a different approach; to what extent it can be interpreted if we analyse it from the aspect of environmental information.

According to Schaltegger's definition, environmental accounting is „such a sub-branch of accounting that includes those activities, methods and systems, which register, analyse and report on the environmental problems of a given economic system or the economic effects of environmental activities [1].

Kósi-Valkó defines environmental accounting as „the set of physical and monetarised information within the accounting information system captured of the environmental factors in the course of the operation of the organisation, sorted and displayed in a form adequate to decision preparation and control [2]. Information is presented within the accounting information system on two levels, on two basic areas of accounting: in management and financial accounting, The traditional management and financial accounting does not provide appropriate frames for the presentation of the environmental information, therefore nowadays it is natural that environmental management and financial accounting has been separated from the traditional management and financial accounting. The environmental management accounting is such a management accounting system, which lays special emphasis on the data of environmental costs, and the information related to material and energy flow, facilitating internal decisionmaking and more realistic internal corporate assessment. The environmental financial accounting provides information to external stakeholders, focussing on the costs of environment-related obligations and other significant environmental costs [3].

Analysing the definitions I think that while the definition of Schlategger includes both the processing of environmental information within the company and its (outward) communication to the market players, the Kósi-Valkó definition highlights the intra-company role of environmental accounting as management information.

Definitions of the prominent researchers, the methods and modes of the processing and displaying environmental information, the contents of key environmental initiatives and their reporting structures both point to the direction that the environmental information system of the entities, as a communication tool may be linked to the management accounting branch, as a sub-system of that.

II. STATUS OF FINANCIAL REPORTING IN THE ASPECT OF ENVIRONMENTAL

The question is raised: if the fact that we identify environmental accounting as a sub-branch of management accounting also means that financial accounting is pushed to the background as far as the presentation of environmental information is concerned?

Looking at the main product of financial accounting, i.e. the financial report it is clearly concluded that its environmental information content

is still minimal despite the recent development of reporting.

The absence from corporate financial reports of information on environmental resources has been documented for several years from the 1990s. In 1991 the US Investors' Responsibility Research Center surveyed institutional investors and found there was a grate demand by them to get more precise and deeper, financially quantified information on environmental liabilities. In 1997, the CICA expressed its opinion that to secure the ongoing concern the financial reports should contain information on externalities. [4].

What could be the reasons for the lack of environmental information, or its low-level presentation in financial reports? Among the reasons the first to be mentioned is that by financial statement we should mean so-called general purpose financial statements. „General purpose financial statements are those intended to meet the needs of users who are not in a position to require an entity to prepare reports tailored to their particular information needs"[5]. We can argue that the higherquality presentation of environmental information in financial statements does not serve general purposes. In my opinion, it is only one side of the truth. If we consider the extent and pace of the use and pollution of the environment, and the short-term and long-term economic impacts of climate change, affecting both society and the business entities, the picture will become more complex. Global Footprint Network calculated that it now takes almost one year and three months for the Earth to regenerate the resources we use and to absorb the waste we produce in a single year [6]. In this case the presentation of environmental information is not to be regarded as particular information needs, but it should be handled as a factor with an increasing influence on the business entities' financial position and financial performance that is useful to a wide range of users in making economic decisions [7].

Another reason could be that the annual report contains important information for the players of economy, but the information needs of the market players are different. Business entities think that by preparing the environmental reports they meet the expectations of those interested in environmental information. On the other hand key stakeholders who rely on corporate financial statements and annual reports (investors, investor organizations, researchers, financial institutions, lenders, analysts, etc.) have long maintained that the financial reporting requirements allow too much flexibility and are too narrow in scope to capture important environmental information [8]. There is a growing trend to include increasing amounts of environment-related financial information and nonfinancial information in corporate financial reports to external stakeholders [9].

Another reason could be that often there is a conflict of interest concerning the information to be presented by the market players and by the company owners or managers. As environmental reports, as the products of environmental management accounting, are not mandatory, many companies may choose not to disclose environmental information, issue environmental reports to avoid attracting public attention, which may impact on their reputation or image and generate problems with governmental agencies [10]. Based on my research I adopted the view that environmental reports present and emphasise the „positive reality", while processes, events and information negatively affecting the image of business entities are presented in a more sophisticated way and low-key manner. Naturally, this attitude is understandable from the part of business entities, but as the information on „negative reality" does not appear in financial accounting and financial statements in an adequate depth and quality, as a result, the principles of reporting are compromised: authenticity, completeness and neutrality.

In many cases, the assertion of the cost-benefit concept may hinder the presentation of environmental information in financial statements in a higher quality: mainly in the case of SME companies the lack of information and the lack of resources necessary for the preparation of information appear as problems, but also on the level of large and multinational companies it may occur that the cost of information preparation exceeds its expected estimated benefits.

When identifying reasons, we should not forget about the nature of the environmental data: they may be measured basically in allowances in kind. Presentation in allowances in kind is adjusted to the structure, and processing course of the environmental management accounting information. The allowances in kind may be transformed into monetary form possibly by using various estimation procedures, which, in many cases, leads to significant uncertainties and information distortion, or cannot be transformed at all. Presentation of information available in allowances in kind in financial statements would be constrained, and results in the duplicated presentation of data and information, if the business entity prepares an environmental report and discloses it.

In relation with identifying the reasons, it is practical to analyse the differences between the time schedule of financial statements and environmental information. The financial statements contain the information of two, maximum three years, while the data, information and events concerning the environment can be presented in a wider time frame to make their changes perceivable and analysable.

In my opinion, accounting as an information system – regardless whether or not focuses on the

company's environmental information, or presents the operation and activities of the business company comprehensively, covering all areas – can fulfil its function completely only if its management and financial account branches interlink, build on each other and complement each other. There is not only demand for the presentation of environment type of information in financial statements, but nowadays it can be formulated as an expectation. The thesis is that, as far as environmental information is concerned, the relation between management and financial accounting is of low quality. The significance and weight of financial statements may be (and must be) improved in the area of the presentation of environmental information by making the relation between management and financial accounting closer.

III. WEAK POINTS OF ENVIRONMENTAL MANAGEMENT AND FINANCIAL ACCOUNTING

In the following my purpose is to point out that at present there is no general acceptance of the format and contents of environmental reports, and also there are significant differences in the level of detail and quality of the presentation of environmental information in the financial statements. Therefore, for the stakeholders, although meeting a number of reports and statements on the environment, at the end of the day it is very difficult to create a comprehensive picture of environmental issues of the entity.

A Review of Key Environmental Initiatives

CSR in fact provides a kind of philosophical background for the environmental initiatives and reports. One of its important dimensions is the management of environment impacts, the preference of natural resources and environment protection. The ABC of CSR refers to the ISO 14000 series and EMAS as „useful frameworks for the companies that can be expanded to address the operationalisation of CSR commitments and objectives" [11]. Given the nature of CSR, however, it mainly communicates positive information and corporate processes, therefore the assessment of environmental risks and environmental performance cannot be undertaken based on the CSR reports.

The ISO 14000 standard series, in particular the ISO 14001 and EMAS provide a framework for the creation and operation of the environmental management accounting system, and for the presentation of the environmental performance. The ISO 14000 series provides standards of EMS and related areas of environmental auditing, audit process and criteria and encourages internal and external communication, for example through an annual report. The ISO 14001 standard does not set absolute environmental performance requirements, but the organisations may self declare to specify criteria for performance.

EMAS is based on ISO 14001 and fully takes over the structure of the ISO 14001 standard in the development of the environmental management system, but it applies stricter requirements in certain areas and adds several elements to the ISO requirements. EMAS is a voluntary registration scheme, which enables companies to demonstrate a commitment to improving their environmental performance by developing environmental policy, establishing an environmental management system and reporting publicly on their performance [12]. There are 4095 organizations and 6119 sites registered under EMAS in EU and EEA as 31.03.2008 [13]. Requirements of EMAS and the issued site's environmental statement include defined issues; from these issues the following information can be integrated with the financial reporting:

- a description of the site's activities,
- an assessment of all the significant environmental issues,
- a summary of figures on pollution emissions, waste, production, consumption of raw material, energy and water, and noise,
- a presentation of the company's environmental policy.

GRI develops globally applicable sustainability reporting guidelines and is a major structured guide aimed at producing standardised disclosure of economic, environmental and social information. Recommended elements on environmental performance to include in a sustainability report: use of energy, materials and water, biodiversity, emissions, effluents and waste, products and services, transport and suppliers, compliance. From the point of financial reporting the two most relevant points are EN28 and EN 30 (monetary data on environmental fines, expenditures and investments). GRI contains reporting principles (going concern, conservation, materiality) and qualitative characteristics for GRI reporting (relevance, reliability, clarity, comparability, timeliness and verifiability) [14]. These principles and qualitative characteristics are defined in financial reporting as well and of course the philosophy of them are in accordance with each other [15].

In addition to the above key environmental initiatives, a number of other initiatives exist, and various other environmental guidelines have been worked out by professional organisations dealing with international and national environments. All in all more than 20 environmental reporting guidelines may be identified, although the list is not likely to be complete [16].

Analysing the environmental initiatives and the environmental reporting guidelines, several weak points may be identified:

- The too many guidelines rather hinder the standardisation, and may be disturbing in relation with the satisfaction of the information requirements of the stakeholders.
- Application of ISO 14000 series, EMAS and GRI is voluntary, thus some of the business entities avoid the application of environmental management accounting and environmental reporting.
- There is no general acceptance of the format and contents of environmental reports, so no standardised environmental reports are issued. - Generally do not provide a standard for environmental disclosures.
- Do not provide guidance for implementing data collection, information and reporting system, or procedures for preparing reports. Environmental management accounting does not only contain and process allowances in kind but also process and serve monetary information, but from this substantially filtered information is integrated into the environmental reports, even if it is recommended so by the environmental initiatives and guidelines.
- Usually refer to principals and the qualitative characteristics for organisations' reports but they do not describe how companies can achieve these characteristics [17].

Key environmental issues in financial reports

Since decades there is a growing trend to include increasing amounts of environment-related financial and non-financial information in corporate financial reports to external stakeholders. The opinion of the EC is that „the information should not be restricted to the financial aspects of the company's business. It is expected that, where appropriate, this should lead to an analysis of environmental and social aspects necessary for an understanding of the company's development, performance or position" [18].

To the presentation and evaluation of environmental information the assumptions, qualitative characteristics, principles generally formulated for financial reporting are valid and applicable.

Analysing the currently valid and internationally accepted directives and recommendations related to financial statements (EC Directives and Recommendations), and the rules of international accounting systems (principally IFRS and US GAAP), the financial statements deal with the following main areas in relation with the presentation of environmental information [19]:

- Initial valuation of assets: when environmental expenditures should be capitalized
- Impairment of assets caused by environmental developments or factors
- Accounting for assets retirement obligations - Recognition of existing and contingent environmental liabilities
- Measurement of environmental liabilities
- Provisions for environmental obligations
- Provisions for site-restoration and dismantling costs
- Offsetting of liabilities and expected recoveries
- Recognition of environmental expenditure: if it is not capitalized, it shall be recognized in the period in which it is incurred
- Disclosures in the financial report on environmental protection measures, relevant environmental issues, reference to environmental report, details on environmental provisions, and liabilities, amount of environmental expenditures and capitalized environmental expenditures, etc. (The proposal on the information related to environment and to be disclosed can be found in detail in the EC Recommendation 2001/453/EC, consequently they are not binding. These have not been adopted into the IFRS.)

(As the subject of the Conference is not accounting, I shall not present more in detail the rules of the presentation and evaluation of environmental information in financial statements.)

As there are a number of guidelines available in the case of environmental reports, there are also supplementary guidelines to financial statements. For instance, for companies listed in the stock exchange with regards to compliance with environmental regulations, legal matters, trends of significant effect and known tendencies, events or uncertainty factors in disclosures required by SEC (Securities and Exchange Commissions) [20].

The weak points of financial statements regarding environmental information are as follows:

- There is no uniformly, generally accepted system of rules, or standards for the disclosure of environmental information within the financial statements. IASB created a separate disclosure standard for financial instruments (IFRS 7). In the absence of a common, recognised and mandatory reporting requirement, the recognition, measurement and separate disclosure of environmental expenditures and liabilities is governed by the accounting concept of materiality [21].
- The EC Directives, IFRS and US GAAP, in a number of cases, based on the materiality of

the information, grant exemption from the obligation of presenting the (environmental) information [22].

- The adoption of the content of the EC Guidelines is mandatory for the member states, consequently, they appear in the national accounting rules and are of binding effect. However, the EC Guidelines often offer a choice for the member states within the given Guideline to decide for what they grant an exemption in the national accounting rules and what deviations are possible. As a result of that, from the national accounting rules of a number of countries the rules pertaining to environmental information have been left out. The application of the IFRS and US GAAP rules is characteristic in the case of companies listed in the stock exchange and/or preparing a consolidated annual report. As a consequence of all these, those business entities who prepare their financial statements only based on the national accounting rules, present the environmental information in their financial statements at a lot lower quality level, in less detail or not at all.

IV. . DEVELOPMENT OPPORTUNITIES OF THE RELATION BETWEEN THE ENVIRONMENTAL REPORTS AND THE FINANCIAL STATEMENTS

Above the insufficiencies and weak points of the environmental reports and environmental financial statements have been summarised. By striving at the supplementation of omissions and the correction of errors, the environmental reports and financial statements approximate to and support each other.

Interpretation of the notion of materiality

Before outlining the alternatives feasible in my opinion, the problem of materiality must be mentioned, which is present regardless we talk about environmental management or financial accounting. One of the aspects of materiality: who, which business entity is material?

„Small and medium-size enterprises (SMEs) make up 99.8% of European companies. These businesses struggle to keep up with ever-changing regulations. Indeed around three quarters of small firms are currently unaware of their environmental obligations and impacts, according to an October 2007 Communication from the European Commission.” [23].

I think that it is not fortunate to link the requirement of the presentation of the environmental information in a system (in an environmental report or financial statement) to the size of the business entities, as these days materiality is inherent in the environmental information. The obligation of the presentation of the environmental information should be defined based on the activity of the business entities and should be linked to sector and industry branch.

The other aspect of materiality: what, what type of information is material? Materiality in this approach may be defined based on the size of the business entity, the nature and regularity of the event, and the various threshold values. In general we can say that the information is material if its omission or false presentation influences the users’ economic decisions [24].

Development of the environmental information content of financial statements

One of the directions of approximating the environmental management and financial reports to each other could be that the data and information generated based on the principles and methods of environmental management accounting worked out and accepted up to now would be adopted in the financial statements, naturally without duplicating the information. In my opinion, this would make it inevitable to create a separate standard containing the presentation of environmental information in financial statements, their evaluation and the systemisation of the information to be disclosed.

The primary nature of environmental reports

Another direction of the approximation of environmental management and financial reports to each other may be if the information presented or only inherent in financial statements would be adopted into the environmental reports.

For this, however, it is necessary for the environmental reports to have a generally accepted and uniform content and structure, which, in addition to the allowances in kind, include such monetary information and explanations which have been left out from the financial statements, or their presentation is not necessary according to the pertaining and effective financial accounting stipulations.

According to the current financial accounting stipulations, if the business entity prepares an environmental report, this must be indicated in the financial report. If the environmental report is standardised, and the environmental financial information were integrated into the environmental reports, another important decision should be made: the presentation of the environmental reports cannot stay voluntary, it must be made mandatory. As I have explained, it is recommended to stipulate the reporting obligation based on the business entity’s activities and on its size.

V. CONCLUSION

The end-product of the environmental initiatives and environmental management accounting is

the environmental report. The end-product of the financial accounting is the financial statement (financial report), in which the presentation of environmental information occurs in a low quality and at a weight nor corresponding to its significance, due to the reasons partly identified in part II. In our days, environmental accounting may be fundamentally identified with environmental management accounting, which, on the one hand, is justified based on the peculiarities of the environment information. However, on the other hand, the problem is that no attempts are apparent to deepen and systemise the environmental information content of the financial statements, and with regards to environmental information the relation between the management and financial accounting is of low quality. The significance of the financial statements in the area of the presentation of environmental information may be (and have to be) increased by making the relation between the environmental management and financial accounting closer. To this effect, the strong and weak points of environmental management and financial accounting must be identified; connection points must be built on common and strong points, the weak areas must be developed, and, in my opinion, through the strengthening of the relation they induce development themselves.

The relation may be established from two directions: either we develop environmental financial accounting by building from environmental management accounting, and we make their relation closer this way, or we integrate the areas neglected in the environmental financial accounting into the content of environmental reports. The former would make it necessary to work out a separate Environmental Recognition and Measurement Rules and Disclosures in Financial Reporting standard, while the latter clearly requires the structure and content-related standardisation of the environmental report.

In my opinion, in the near future an international accounting and/or environmental professional organisation must inevitably undertake to channel the mass of the information of environmental reports and environmental financial statements prepared based on different guidelines towards ensuring transparency, systemisation and standardisation.

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Business benefits of good environmental performance: Experience from the Hungarian manufacturing sector

Gábor Harangozó PhD
Corvinus University of Budapest, Department of Environmental Economics and Technology,
Fővám tér 8. 1093
E-mail: gabor.harangozo@uni-corvinus.hu

***Abstract*: This paper attempts to give some empirical evidence whether good environmental performance can influence corporate competitiveness. Empirical evidence is taken from the Hungarian manufacturing sector in form of a survey and interviews.**

I. INTRODUCTION

It has been in the focus of research for many years, whether and under what conditions good environmental performance can contribute to the success of companies. Concerning former research, there is a significant divergence on the possibilities of environmental management in business success (see for example references [1]-[4]). In this paper the concept of environmental performance is analysed in connection with general corporate performance. In literature there are many motivation factors for environmental performance (legislation, cost saving opportunities, expectations of society, etc.) but finally company decisions are made based on their expected effects on company performance.

In this paper focus is put on the benefits of good environmental management and performance on corporate performance as professionals in the Hungarian manufacturing sector perceive.

II. CONCEPTUAL FRAMEWORK

Relevance of analysis exploring the relationships between environmental performance and other elements of corporate performance (financial, operational etc.) is undisputable. If an unambiguous positive correlation was established, it would leave no doubt for companies to aim at excellent environmental performance (as well). Literature offers numerous theoretical and empirical researches proving the correlation between environmental and corporate performance, and the upgrading effect of environmental excellence on the overall corporate performance.

A. The business optimistic and the sustainability approach

According to the popular, however controversial theory of Porter and van der Linde (eg. [4]-[5]), environmental and corporate competitiveness, that is to say successful business, is compatible. Central point of their argumentation – demonstrated on real-life examples – is that pollution equals to inefficient corporate functioning. Thus improving environmental performance is beneficial also from an economic efficiency point of view. At the same time, strict environmental regulation encourages innovations, and improvement of efficiency, which is favourable to corporate competitiveness (dynamic approach). The authors consider environmental excellence and environmental-conscious corporate behaviour as a possible early mover advantage.

In their work Weizsäcker, Lovins and Lovins [6] see such a great potential in the improvement of eco-efficiency that, despite the expansion of economic activity, it is possible to decrease the environmental load in an absolute value. Thus environmental and corporate performance is closely correlated; environmental excellence can improve the economic results of companies.

Positive correlation between environmental and corporate performance has been attempted to be proven by several researchers also in an empirical way; usually by comparing indicators of the two categories. Russo and Fouts [3] compared environmental and corporate performance of 243 American industrial companies. They found a positive correlation, especially in fast-growing industries. Feldman et al. [7] examined the link between environmental load and financial risks in their multifactor regression model. They state that a lower level of polluting emission decreases financial risks, leading to lower costs of capital and higher equity prices. Similar research results are quoted by Pataki [8] or Havemann, Webster [9].

"Business optimists" however indirectly presume a growing company and economy size by the improving environmental performance, which is in fact, probably not sustainable. "Sustainers" in fact, would welcome a tendency where there is a maximal level of corporate performance, achievable by excellence in the field of environmental performance.

Before sitting back contentedly however, stating that – based on previous arguments –improvement of corporate environmental performance has a green light; it is worthy to see the counter-arguments as well.

B. The sceptical approach

Approaching the issue from a logical point of view, it is already hard to understand why not all companies are aiming excellent environmental performance, if it means so much benefit. It was conceivable of course, that some of the managers do not act rationally when disregarding environmental

interests, if this group of company leaders was the minority. This assumption is, however, hard to be proven by typical corporate practice.

During the last couple of decades countless academic researchers, pragmatic experts and environmental activists have given voice to their view, that current form of economy and corporate operations are not compatible with sustainability. Accordingly, companies reach a profit by means of destroying natural capital. If this is also accepted concerning weak sustainability appearing in typology of Pearce [10]; it is clear to see that current corporate practice is destroying a bigger volume of natural capital than economic surplus created.

In his book about shareholder value theory, Rappaport [2] argues that beyond complying with regulations, companies should not deal with environmental and social questions, as it would reduce created shareholder value, the ultimate measure of social usefulness of companies (p. 5-6.). These ideas coincide with „the business of business is business" approach of Friedman. According to Rappaport, managers neither have the authorization, nor the expertise to make for example environmental decisions. In opinion of the author, the theory in question is only suitable to serve as a scapegoat for unprofitable decisions. (same source, p.7.).

In their article Palmer, Oates and Portney [11] tackle the theory of Porter and van der Linde introduced earlier, whether environmental protection and business results of companies could be defined by a win-win situation, and strict environmental regulations would improve corporate competitiveness. In their opinion, arguments of Porter, using case studies where correlation between environmental and economic performance is positive, is not convincing. On a probability basis of course, such companies can be found, but Palmer et al. would also easily find companies where growing rigour of environmental regulations would lead to extra costs and losses. Pursuant to this approach, in most cases environmental and business interests are clashing, and – in line with one of the fundamental assumptions of economics – there is no free lunch, not to mention lunch paid by someone else. (p. 120.).

Gerde and Logsdon [12] compared results of 12 different paradigmatic researches, analyzing correlation between environmental and other corporate performance dimensions based on the TRI in the USA. Although a part of researches in question suggest a positive linkage between reduction of pollution and financial performance, most of them do not confirm it at all. However, one of the quoted research statements is interesting: the greatest decrease of environmental pollution has been achieved by companies, whose share prices had plummeted the most in previous periods.

Besides stating a positive link between the environmental and economic performance, "optimists" usually measure environmental performance according to a certain categorization or ranking. These rankings are however, usually based on corporate information that is relatively simple to achieve, and can be compared easily. Thus they risk measuring environmental performance mainly through environmental management type of indicators (e.g.: existence of environmental strategy, politics, environmental prizes, qualifications won by companies, etc.), while little attention is paid to particular environmental emissions.

C. The realistic approach

So then which approach is right? Those who, like Porter, claim that excellent environmental performance leads to improving corporate competitiveness, or those who, similarly as Palmer et al. argue that the majority of corporate environmental projects will never return?

Most probably in most cases there are to some extent eco-efficient 'win-win" situations resulting improvements in both environmental and financial performance. Besides external factors, the spectrum of these possibilities also depends on the environmental consciousness of company leaders, as it can easily be the case that a less devoted leader does not even consider that environmental excellence might contribute to corporate competitiveness. However, sooner or later even the greenest companies run into walls becoming harder and harder, partly because budget limitations, partly due to decreasing marginal utility.

It can be agreed that excessive optimism is not valid beyond a certain point; however it is probably also not true that win-win type of investments were only the top of the iceberg. The author thinks that logic of Palmer et al. is not sound in the respect that it considers only declared environmental projects as a tool of improving environmental performance. Among these type of projects however there are several, that aim to eliminate a backlog of pollution, or other – using the vocabulary of Csutora and Kerekes ([13], p.92.) – „must" projects, which probably only mean huge costs to the company and will never return. Improvements in environmental performance however, happens in many cases thanks to more efficient technology or an energy-saving measure, although it might be, that protection of the environment as an aspect has not even been raised.

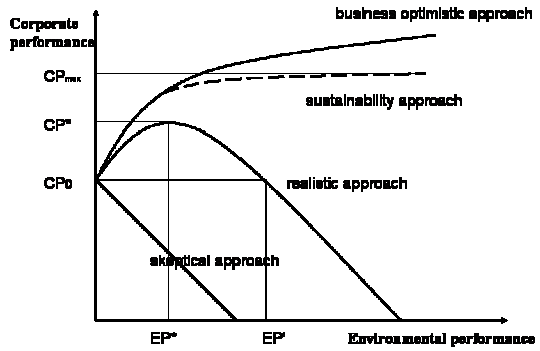

FIGURE. 1: POTENTIAL RELATIONSHIPS BETWEEN ENVIRONMENTAL AND CORPORATE PERFORMANCE. (BASED ON A MODEL OF SCHALTEGGER AND FIGGE [1], P. 30., COMPARING LEVEL OF ENVIRONMENTAL EFFORTS TO COMPANY VALUE).

Figure 1 provides an overview on the different approaches. Although the figure is quite simplistic (as both concepts of corporate and environmental performance were considered as multidimensional categories, thus in practice it might be problematic to place specific companies), it helps demonstrating optimistic, sceptical and realistic approaches that have been overviewed.

In line with earlier considerations, in the optimistic approach improving environmental performance leads to improving corporate performance as well (although based on the decreasing marginal utility theory presumably after a certain period of time, corporate performance is growing with a slower pace). According to the sceptical approach, environmental and corporate performances are retrograding, due to expenditures . In the realistic approach, environmental performance has an – from corporate performance point of view – ideal EP* level, where corporate performance has a local maximum (CP*). At the same time one can see that level of corporate performance (CP0) achieved with zero environmental performance can be also maintained in case of high environmental performance signed by EP'.

III. LINKS BETWEEN ENVIRONMENTAL AND CORPORATE PERFORMANCE IN PRACTICE

The empirical research is based on two pillars. Firstly, data of an – in Hungarian terms – large scale survey is analyzed. This database includes company level data of 466 Hungarian manufacturing companies regarding different components of their environmental performance, as well as motivations and perceived benefits in order to improve in the environmental field. This survey provides a good background to analyze general tendencies, but in order to gain deeper understanding on the links between environmental and business performance, additional interviews with corporate professionals have also been carried out. The survey in Hungary was carried out as part of an international OECD survey by the researchers of the Corvinus University of Budapest. For more information on the sample, as well as descriptive statistics see the national report (Kerekes et al. [14]).

Analysis was made on whether companies where environmental protection activities are thought to be positively contributing to the general performance of the company, have actually better environmental performance.

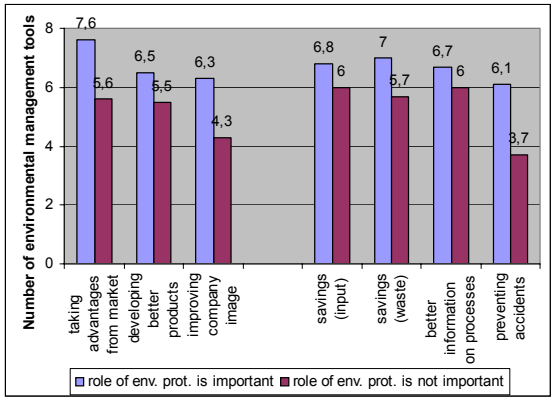

FIGURE 2: APPLICATION OF ENVIRONMENTAL MANAGEMENT TOOLS DEPENDING ON THE PRESUMED RELATIONSHIP BETWEEN ENVIRONMENTAL PROTECTION AND CORPORATE PERFORMANCE.

Figure 2 shows that companies considering environmental protection as an important factor in corporate competitiveness apply significantly more environmental management tools than others.

Interpreting the figure from another aspect, one can analyse which links between environmental protection and company performance do really influence, whether the company implements well or less developed environmental management. Variables showing significant relationship with level of environmental management tools were divided into two groups. One includes variables taking environmental protection as a tool for improving market performance, the other relates to operational performance.

Companies seeing market potential in environmental protection (as a consequence of better products or less polluting production processes) applied above average environmental management tools. Same is true for companies considering environmental protection as a factor of improving company image.

The question is still open, whether considering environmental protection as an important tool in increasing competitiveness leads to improvements in relative environmental load or not. Some tendencies in this field are shown by Figure 3; there are positive connections regarding both contributions to market and operational performance.

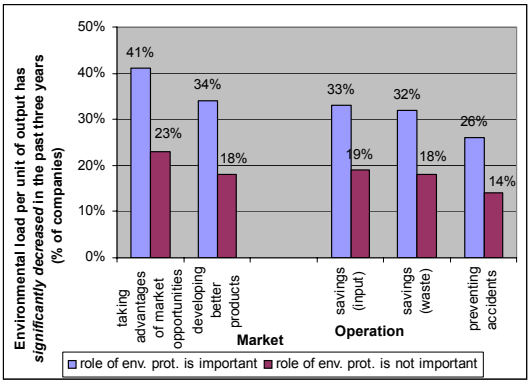

FIGURE 3: TENDENCIES IN RELATIVE ENVIRONMENTAL LOAD DEPENDING ON THE PRESUMED RELATIONSHIP BETWEEN ENVIRONMENTAL PROTECTION AND CORPORATE PERFORMANCE.

Comparing components of environmental performance based on the last three figures it shows clearly: although companies putting pressure on environmental protection in order to improve company image have good environmental management, they do not perform exceptionally well regarding decrease in environmental load. Those companies in contrast, seeing also opportunities in environmental protection in input- or waste-side cost saving, not only have above-average environmental management, but also achieved better results in decreasing environmental load per unit of output.

A further key issue is whether actual improvements in company performance can be really detected in case of companies considering environmental protection for increasing competitiveness. For that purpose however, the questionnaire offered only very limited possibilities.

Even if net added value generated by environmental protection to the companies cannot be reconstructed; it can make sense to analyse changes in profitability and turnover of companies seeing business potential in environmental protection (Figure 4).

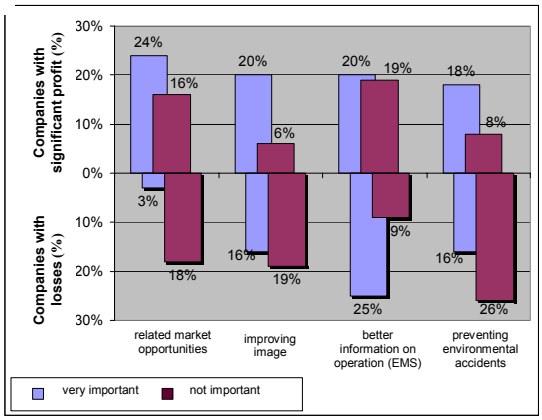

FIGURE 4: LINKS BETWEEN PROFITABILITY AND MOTIVATIONS BEHIND ENVIRONMENTAL PROTECTION.

Figure 4 shows that among companies seeing performance improvement potential in environmental protection, significantly profitable companies are overrepresented. At the same time, proportion of companies with losses is much lower than average. An exception is assessment of EMS-contribution to better information on processes; in this field also companies with losses appear in high proportion.

Based on the figure, of course, direction of the linkage cannot be decided. It can also be interpreted that profitable companies see potential in environmental protection (as well as in many other fields), perhaps (also) because of that they have better results. Based on previous analysis one might raise the question whether economically successful companies – performing well in almost all areas – would also have tendentiously better environmental performance.

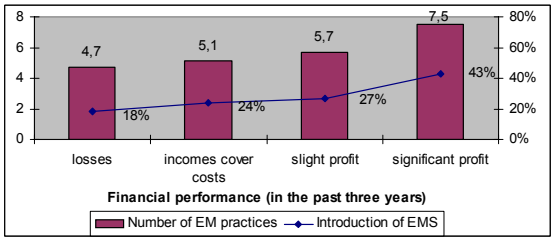

FIGURE. 5: LEVEL OF ENVIRONMENTAL MANAGEMENT BASED ON PROFITABILITY.

It can be seen from Figure 5 that corporate profitability is in a positive relation with number of environmental management tools applied (on the left axis). Similarly, companies with significant profits have implemented EMSs twice more often than companies with losses (right axis). Furthermore, if different categories of profitability are compared, it seems that companies with significant profit perform outstandingly in the field of environmental management.

Beyond level of environmental management, implementation of different specific management tools were also analysed in relation to company profitability (Figure 6).

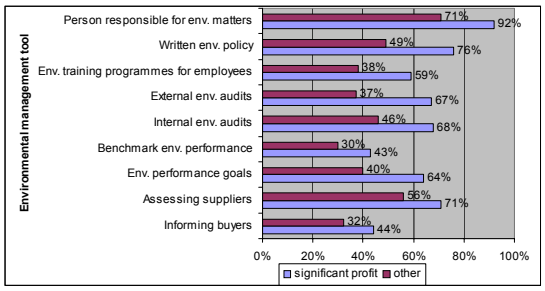

FIGURE 6: APPLICATION OF DIFFERENT ENVIRONMENTAL MANAGEMENT PRACTICES DEPENDING ON THE LEVEL OF FINANCIAL PERFORMANCE.

Nine of the fifteen environmental management tools analysed were significantly more often applied by companies with solid profits compared to others.

For a better interpretation of results, potential multicollinearity behind profitability (for company

size) was also checked. Analysis showed however, that there was no link between profitability and company size, so relationships on Figure 6 can be accepted.

Thus data from the figure can be interpreted that profitable companies can afford in higher proportion to employ someone responsible (only) for environmental matters or organise environmental training programmes for employees. Presence of an environmental department however – depending rather on company size and industrial activity – was not over proportional in this group.

Although environmental audits and other environmental performance evaluation methods can contribute to the improvement of company performance; application of these tools need financial and human resources, available mainly at profitable companies.

Data on environmental assessment of suppliers can be interpreted as companies with losses may focus mainly on price, while profitable companies can afford also to think on the long run, considering also other aspects than procurement price. Weak environmental performance of suppliers may also harm company image.

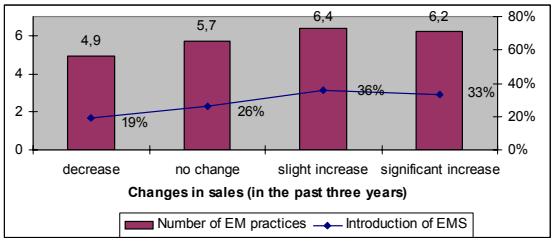

FIGURE 7: LEVEL OF ENVIRONMENTAL MANAGEMENT BASED ON CHANGES IN SALES.

Figure 7 shows that growing enterprises apply usually more environmental management tools and implement EMS more often than other companies. In contrast to analysis of profitability, in this case fast growing companies do not perform exceptionally well, maybe because concentrating on growth absorbs most resources of these companies.

Based on the last figures the question may arise, whether good environmental performance would be a luxury affordable only for economically well performing companies. If it is true, companies representing a major part of economy with not exceptionally good profitability do not offer too much. Before accepting this – from an environmental aspect not very motivating – assumption, analysis on other components of environmental performance is also recommended.

Accordingly, many comparisons were carried out between variables on concrete environmental actions, changes in environmental load and variables on economic performance, but no significant relationship at all was detected.

This means that economically successful companies – maybe because they can afford it better – practice more developed environmental management activities; but this does mean at all that they would carry out more concrete environmental actions or their relative environmental load would be lower.

IV. LIMITATIONS AND FUTURE RESEARCH

The different approaches on the links between corporate and environmental performance presented in this paper provide an easily overviewable framework for analysis. However, practical use of this model is significantly limited by the fact that in the present form operationalisation of none of corporate or environmental performance is satisfactory, as both are multidimensional categories.

Similarly, although the present database provided relatively good data on environmental performance of companies, information on business performance was not enough to reconstruct the exact trends.

Further operationalisation of the model and more appropriate database however can make future analysis more exact.

V. CONCLUSION

Analysis shows examples for positive relationships regarding environmental and operational, market as well as financial performance. Beyond general findings, the evidence of the interviews highlights the importance of corporate culture, personal values of professionals as well.

Empirical results show that profitable and growing companies develop much more comprehensive environmental management practices than the others and also introduce EMS more often.

In contradiction, good economic performance in itself is not a guarantee at all for more environmental actions and development, and for greater eco-efficiency.

Consequently, the often heard assumption – that environmental protection is a “luxury” of wealthy companies – seems not to be true, as it is not even true that such companies have above-average environmental performance.

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Social Impact Measurement: Towards a guideline for managers

Karen E.H. Maas
Erasmus University Rotterdam, Department of Applied Economics,
Burgemeester Oudlaan 50, 3000 DK Rotterdam
E-mail: maas@few.eur.nl

***Abstract*: This paper analyses contemporary social impact measurement methods. Social impact measurement methods can differ in *perspective*, *purpose* and *approach*. These differences make it hard for an organization to decide what would be a relevant method for them to use. Therefore, in our paper we provide an overview of existing social impact measurement methods. Secondly, we develop a set of criteria with which the various measurement methods can be evaluated. Thirdly, we develop a preliminary guideline that will help managers to select a method to measure their social impact. Finally, we define the next steps to take in our reserach.**

***Keywords:* Social Impact, measurement methods, guideline**

I. INTRODUCTION

This paper analyses contemporary social impact measurement methods. These methods are developed in line with the changing needs for management information as a result of increased interest in social impact measurement. Measuring social impact urges organisations not to focus on economic and financial value in an isolated way, but to assess their impact across the environmental, social and financial dimension. Ideally, those impacts should be incorporated into management decisions to able organisations to actually manage their social impact.

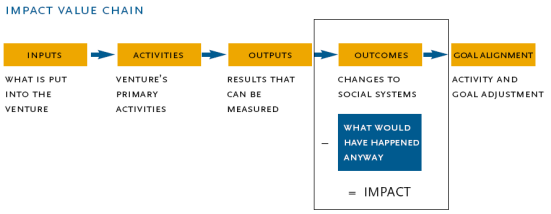
When it comes to the role that companies, and organisations in general, can play to help to achieve sustainable development, terminology and definitions become obscure, with terms as corporate social responsibility, corporate sustainability, social entrepreneurship, corporate responsibility, community involvement, corporate responsiveness, corporate citizenship, corporate social performance, and many others [1-3]. Despite the apparently random used terms the interdependency of organisations and society and a role for the triple P (People, Profit, Planet) is generally accepted. In this paper, our starting point is a situation in which organizations not only strive for economic gains but also adopt a broader view and take responsibility for their total impact on the society in which they operate. This situation urges organizations to assess their impact across environmental, social and economic dimensions and, ideally, to incorporate those impacts into management decisions. Such impacts are often not expressed by the market, do not have a market value and are therefore fundamentally ignored by companies [4-6].

The movement towards social accountability is not sector specific [7]. In corporate boardrooms managers are more and more being asked to describe, for example, their impacts on the environment or the local economy. Similarly, in not-for-profit or governmental organisations there is an increasing interest in more tangible accountability for the social impact created for each invested or granted Euro. Traditional accounting and management standards do not usually consider environmental or social questions. Social impacts are often not explicitly included in valuation studies or are even ignored. In literature much emphasis is put on the pay-back results of social initiatives for companies and not on the impact of social initiatives on society [8-11]. This brings us to our research question:
"*How can Social Impact be measured?"*

II. SOCIAL IMPACT

Language used by different researchers form business and society, management accounting and strategic management and from practitioners is confusing and by far consistent. The main difference is found between the entrepreneur's and social scientist's definitions of the words "impact", "output", "effect", "outcome" and "social return". Many different definitions of (social) impact or related terms can be found in literature ([7, 12-14]). The term (social) impact is often replaced by terms as "social value creation" [15] and "social return" [7]. Definitions related to the control, assessment and management of (social) impact are also provided by business and society and management literature [16-18]. Table 1 shows an overview of those different definitions.

In our paper we use the definition of Social Impact as developed by Clark, et al. (2004), which is in fact a definition from a social science perspective:
"*By impact we mean the portion of the total outcome that happened as a result of the activity of an organization, above and beyond what would have happened anyway*".



This definition is based on the so called Impact Value Chain (see figure 1) and is developed to differentiate outputs from outcomes and impact (Clark et al., 2004).

FIGURE 1: IMPACT VALUE CHAIN (Clark et al., 2004)

Term	Definition
Social impact Burdge et al. (2004)	By social impacts we mean the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organize to meet their needs and generally act as a member of society. The term also includes cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and society.
Social impact Latané (1981)	By social impact, I mean any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behavior, that occur in an individual, human or animal, as a result of the real, implied, or imagined presence or actions of other individuals .
Impact Clark et al. (2004)	By impact we mean the portion of the total outcome that happened as a result of the activity of the venture, above and beyond what would have happened anyway.
Impact Reisman (2004)	To achieve a desired result, many other types of changes must occur along the way. Some of these "on the way changes" reflect actual changes in peoples' lives, either at the individual level or population level. Changes in peoples' lives can include changes in knowledge, skills, behaviors, health or conditions for children, adults, families or communities. These changes are defined as impacts.
Social Value Emerson (2001)	Social value is created when resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole.
Social Impact Assessment Freudenburg (1986)	Social impact assessment refers to assessing (as in measuring or summarizing) a broad range of impacts (or effects, or consequences) that are likely to be experienced by an equally broad range of social groups as a result of some course of action.
Social Impact Management Gentile (2002)	Social impact management is the field of inquiry at the intersection of business practice and wider societal concerns that reflects and respects the complex interdependency between these two realities.
Social Impact Assessment Wikipedia (2008)	Social impact assessment includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment

TABLE 1: DEFINITIONS OF (SOCIAL) IMPACT AND RELATED TERMS

An example might be illustrative to explain the differences between the different steps in the impact value chain. In our example the input is a philanthropic program of a company in which a primary school has been build in the local community where the company has a production facility. The result is that children have now a school to go to. This output can more or less easily be measured, for example by counting the children going to school and calculating the hours of lessons given at the school. The outcomes are the changes one is trying to make in the world. In our example that might be the absence of the children in the production facility and the presence of the children at school. Elimination of illiteracy among children might also be an outcome. To be able to measure the impact, a counterfactual is needed to compare to the experimental state in order to discern the dependent variable from among all other factors that could be causing a change. In our example, the impact can be similar to the outcomes if the chance that a school would have been build without financial support of the company is equal to zero.

III. SOCIAL IMPACT MEASUREMENT

In order to help organisations to measure social impact, science, companies and other organisations around the world create new measurement methods and develop performance indicators. Although this field of research and development is still quite young, especially during the 1990s several methods are developed to measure social impact. The existing measurement methods however do not show a common understanding of what to measure, why or for whom to measure and how to measure it. As a result, methods could differ in *perspective*, *purpose* and *approach*.

A preliminary overview of methods

Literature research resulted in a preliminary list of sixteen impact measurement methods (see Table 2) [4, 7, 19-21].

- Millenium Development Goal scan (MDG-scan)
- Poverty Social Impact Assessment (PSIA)
- Social Impact Assessment (SIA)
- Stakeholder Value Added (SVA)
- Social return on Investment (SROI)
- Social return Assessment (SRA)
- Ongoing Assessment of Social Impacts (OASIS)
- Social Costs-Benefit Analysis (SCBA)
- Balanced Scorecard (BSc)
- Atkinsson Compass Assessment for Investors (ACAFI)
- Local Economic Multiplier (LEM)
- Best Available Charitable Option (BACO)
- Triple Bottom-Line Accounting (TBL)
- Measuring Impact Framework (MIF)
- BoP Impact Assessment Framework
- Social Compatibility Analysis (SCA)

TABLE 2. (SOCIAL) IMPACT MEASUREMENT METHODS

Next to the impact measurement methods several companies, NGO's and associations developed guidance documents, often based on one or more existing methods, how to measure social impact. A few examples are the "Guidance document for the oil and gas industry" [22] and guidance documents developed by Shell [23, 24].

Classification of the methods

The methods can be classified based on the characteristics of the methods. Such classification might be helpful for companies when they want to select a social impact measurement method. Several characteristics are expected to be of relevance for method selection. Table 3 provides an overview of those characteristics.

The first characteristic is the potential *user* of the methods. Several methods are mainly developed for and used by profit organizations (e.g. SRA, ACAFI, TBL, MIF, BACO), while other methods are mainly developed for and used by not-for-profit or governmental organizations (e.g. SROI, OASIS, SCBA, LEM).

Characteristics	**Types**
Users	Profit Non-Profit
Focus	Ex-post Ex-ante
Orientation	Input Output
Perspective	Micro (Individual/employee) Meso (Company) Macro (Society)
Approach	Process Methods Impact Methods (Business Case, 3P's) Monetization
Purposes	Screening Monitor Reporting Evaluation

TABLE 3: CHARACTERISTICS OF SOCIAL IMPACT MEASUREMENT METHODS

The second characteristic is the *focus* of the assessment used by the method. Some methods can be applied ex ante to assess impacts which can for example be expected from planned reforms and programs. Those methods have the ability to open up space for different options, support the design of mitigation measures and modifications, and assist decision makers in choosing the option which fit best [25]. Methods can also be developed with a focus on ex post evaluation purposes.

Thirdly, methods can have either an *orientation* on the inputs or an orientation on the outputs. Input oriented methods are useful to assess differences in input (for example expenditure saved by increased employee satisfaction) as a result of a social measure taken. Output oriented methods, on the other hand, are useful to assess differences in output as a result of a social measure taken (for example a better reputation).

Fourthly, measurement methods can originate, for example, from business measurement, social science evaluation, policy or program evaluation which all takes a different *perspective* on the social impact to be measured. A first inventory showed that social impact measurement from a business (micro) perspective does include, for example, different indicators than social impact measurement from a (macro) socio-economic perspective [3].

Fifthly, methods can have different *approaches* to measure social impact. In literature, three broad categories are defined: process methods, impact methods and monetization methods. Process methods monitor the efficiency and cost-effectiveness of ongoing operational processes. As such, they do not provide an absolute measure of social returns. However, output can be evaluated by the extent to which they correlate with or cause desired social outcomes. Impact methods measure operational outputs and their impact, i.e. the incremental outcome beyond and above what would have happened if the organization did not exist. Impact can be measured in several ways. There are methods that measure impact by linking Corporate Social Performance (CSP) and Corporate Financial Performance (CFP) [9, 26-31]. Another example of an impact methods is the so called 3P approach where the economic dimension (Profit), social dimension (People) and environmental dimension (Planet) are all measured in their own unit [4, 32, 33]. Monetization methods, quantify social and environmental indicators and translate those indicators into a monetary value to be comparable with traditional financial data [3, 6]. A comprehensive overview of several monetization methods can be found in environmental economic literature [34].

Finally, "different measures for different *purposes*" tells us that measurement methods can be developed for different purposes depending on what we want to measure. To be able to distinguish the existing measurement methods based on the different purposes, we identified methods that are particularly suited for (a) screening, (b) monitoring, (c) reporting and (d) evaluation. Methods suited for screening facilitates evaluation of investment opportunities and of their performance with respect to investors' specific social and financial objectives. Methods suited for monitoring assists management with ongoing operational decision-making, and provide data for investor oversight. It may also help entrepreneurs to identify business model modifications or market opportunities. Methods for reporting are particularly useful to report to external stakeholders, such as potential investors, the public or other entities that require or request performance reports on a regular basis. Methods for evaluation

may be used for retrospective, ex-post impact assessment of achievements for academic purposes but also for organizational learning.

IV. TOWARDS A GUIDELINE FOR MANAGERS

The mixture of methods and their differences in focus, orientation, perspective, approach and purpose make it hard for managers to select a suitable method for their social impact measurement. We developed a first draft of a guideline for managers, based on the characteristics of the methods.

The guideline will help organizations to select a method to measure their social impact. A first draft of the guideline, based on a question and answer flow diagram, is developed. The idea is that managers, by answering a few questions, will be able to select a useful method for their specific measurement need. The following questions seem initially to be relevant to be used in the guideline:

1. What is the purpose of your measurement?
   - a. Screening? Yes/no
   - b. Monitoring? Yes/no
   - c. Reporting? Yes/no
   - d. Evaluation? Yes/no

2. Do you want to use a specific perspective?
   - If yes, go to question 2a.
   - If no, go to question 3.

   2a. Micro? Yes/no
   2b. Meso? Yes/no
   2c. Macro? Yes/no

3. Do you have a desired approach?
   - If yes, go to question 3a
   - If no, go to question 4

   3a. Process approach? Yes/no
   3b. Impact approach?
   - If yes, go to question 3c
   - If no, go to question 3e

   3c. CSP/CSR link? Yes/no
   3d. 3P approach? Yes/no
   3e. Monetization method? Yes/no

4. …….

Figure 2 illustrates the structure and content of the guideline.

V. NEXT STEPS

In the next steps of our research we will extend our search for social impact measurement methods. Although we did found already sixteen methods, our list is not conclusive yet. Secondly, we will classify all methods based on the characteristics of the measurement methods. Thirdly, based on the results we will develop a comprehensive guideline for managers to select a social impact measurement method.

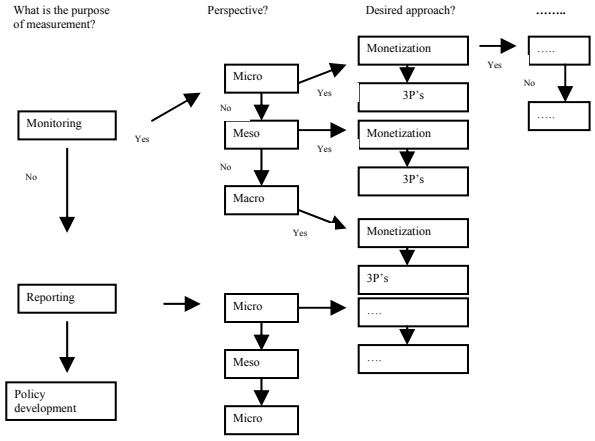


FIGURE 2: FIRST DRAFT OF GUIDELINE FOR MANAGERS

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ENVIRONMENTAL DISCLOSURE OF THE BIG FRENCH FIRMS: STUDY OF DETERMINANTS

Amel BEN RHOUMA
PHD in Management IAE Nice
Amelnice2003@yahoo.fr

Abstract : **The purpose of our study is to explore the evolution of the scope and patterns of corporate environmental disclosure of the French companies and to identify determinants likely to explain the strategies of communication of this type of information. Our study is based on three-tiered conceptual framework that weaves together three complementary perspectives: information costs and benefits, legitimacy theory and governance. Regarding the first purpose, results show that level and quality of corporate environmental reporting tend to converge over time. With respect to the second purpose, consistent with expectations, results show that information costs and benefits faced by capital market participants, governance and monitoring considerations as well as the need for firms to legitimise their activities all influence environmental disclosure.**

Key words: **Environmental disclosure, information costs, proprietary costs, governance, legitimacy, GRI, NRE.**

THE MANAGEMENT EVALUATION OF SUSTAINABLE DEVELOPMENT

Dr. Art Kovačič
Institute for Economic Research Kardeljeva pl. 17, 1109 LJUBLJANA – SLOVENIA Phone: 386 1 5303 868
Fax: 386 1 5303 874
e-mail: kovacica@ier.si

SUMMARY

Assessment of sustainable position of selected countries is the important challenge in the last years. The sustainable theory has changed from the years of Rio conference and the availability of statistical resources is becoming better. Sustainable development is an important objective for each country. Enlargement of the EU has brought the current priorities and future direction of EU environmental policy sharply into focus. Enlargement process has increased the standards of environmental protection and social development. Significant environmental investments are necessary and the new members need to speed up their preparation for implementing the Goethenburg strategy "sustainable strategy". The sustainable development on business level is more important through stakeholder approach. Stakeholder influence stategies should aim at both external pressures (regulations and market changes) and change in internal corporate factors (such as corporate culture) as a basis for affecting corporate environemtnal strategy and processes. A new strategy on Corporate Social Responsibility ('CSR'), which aims to take forward the contribution of business to sustainable development, was adopted by the European Commission. The sustainable development on business level is more important through stakeholder approach. Stakeholder influence stategies should aim at both external pressures (regulations and market changes) and change in internal corporate factors (such as corporate culture) as a basis for affecting corporate environmental strategy and processes. Alternatives for stakeholder influence include market pressure, sensitive property ownership, legislation/regulation, public policy influence, direct action (often counter-productive in coalitions), lawsuit, mediation/arbitration, dialog/voice and voting representation. Stakeholder theory holds that organizational performance ought to be judged by how effectively managers balance the interests of a multiplicity of external and internal constituents. Development must take into account the qualitative view of improvement. It deals with the quality of life. Quality of life is becoming the important objective of each country. Assessing the development position of countries takes more in the view the quality of life, because the people needs are the motor of development process. There are many posibilities to measure quality of life, especially in the last years. So, it is not just the environment-economy relationship, but also the social development. For new member countries is the creation of sistems of sustainable development indicators (SDI) an important tool for policymakers and strategy writters. In Slovenian case we have used the management perceptions about development position. So the CSR concept have some influnece on national development strategy and also on the Slovenian system of sustainability indicators.

***Keywords*: economic development, benchmarking, development strategy, environmental economics**
JEL classification: 01, 024, 038, Q5
UDC: 339,9

I. INTRODUCTION

The evaluation of sustainable development is the basic approach to the assessment of the development path of the particular country. The selected indicators serve the governement/society as the framework for long term policy making. Environmental, social, institutional and economic developments are strongly linked. They are crucially important for the well being of the current as well as future generations. But environmental and social policies are sometimes formulated without due regard to their economic consequences. The term sustainability evokes the image of an economic system able to evolve without deterioration from its current state into the longterm future, being in balance with nature. Originally, a stakeholder was defined as any group or individual who can affect or is affected by the achievement of the firm's objectives. The challenge to management is to successfully conficiting interests, while at the same time acknowledging the intrinsic value of all legitimate claims (Clarkson, 1995). Business sector implement the sustainable development also through implementation of corporate social responsibility. This take into account also the sustainable responsibility. The contemporary corporate social responsibility agenda, however, is relatively immature in all countries. Despite widespread rhetoric, its impact is still patchy. In practice, implementation of this agenda by many companies is shallow and fragmented. Governments are beginning

to view corporate social responsibility as cost-effective means to enhance sustainable development strategies, and as a component of their national competitiveness strategies to attract foreign direct investment and position their exports in global markets. Company strategy and public policy are alike concerned to match supposed international challenges. This also increasingly affects individuals, who are also required to become competitive in the way they conduct their lives, these demands going under the headings of being flexible, innovative, imaginative entrepreneurial, etc. Companies create external effects through their operations or actions. These effects can be positive - for example spill over effects from research and income multiplier effects in local communities - or negative, a classical example being pollution. It is expected that governments or other entitites that are external to the market relevant costs if the impact of the externalities is not acceptable to important stakeholders, for example the investment and operational costs of pollution control equipment (Steger, 2004). We are implementing the new european strategy for CSR. A new strategy on Corporate Social Responsibility ('CSR'), which aims to take forward the contribution of business to sustainable development, was adopted by the European Commission. The strategy calls for a new social and environmental rôle for business in a global economy and sets up a 'European Multi-Stakeholder Forum' for all players social partners, business networks, civil society, consumers and investors to exchange best practice, to establish principles for codes of conduct and to seek consensus on objective evaluation methods and validation tools such as 'social labels'. The strategy seeks to complement existing initiatives by companies themselves and by public organisations such as the OECD and the UN. CSR is defined as voluntary social and environmental practices of business, linked to their core activities, which go beyond companies' existing legal obligations. The strategy will also support CSR in small and medium-size undertakings ('SMEs'), in particular by identifying the business case for CSR and by awareness raising of SMEs. For sustainable assessment is important to take CSR into account. So the management move to sustainable development is the important step. We can't implement the european sustainable strategy without business sector.

Development must take into account the qualitative view of improvement. It deals with the quality of life. Quality of life is becoming the important objective of each country. Assessing the development position of countries takes more in the view the quality of life, because the people needs are the motor of development process. There are many posibilities to measure quality of life, especially in the last years. So, it is not just the environment-economy relationship, but also the social development. For new member countries is the creation of sistems of sustainable development indicators (SDI) an important tool for policymakers and strategy writters. Slovenia, Croatia, Hungary, Czech, R., Slovakia, Estonia, Latvia, Litva, Poland, Malta and Ciper are less developed compared to old EU countries. The French translation of the term perhaps makes the concept of economic sustainability cleaner, when they talk about "development durable", i.e. which last in time. What kind of economy lasts in time, or in other words, what are the economic aspects which may be managed with local or national interventions? On which factors should development be based to enable the area and local public institutions to intervene or guide it, and above all for it to durable in time? Sustainable development means integrating the economic, social and environmental objectives of society, in order to maximize human well being in the present without compromising the ability of future generations to meet their needs.

Our sensibility is that we need a more encompassing definition of sustainable development. It would include programs and policies that promote a more equitable distribution of new jobs and income while boosting a national capacity to innovate. It would foster economic stability and increase the economic and political empowerment of the citizenry. It includes more equal roles for women and minorities, improved health and raised levels of educational attainment, access to better housing, a more effective public transport system, safer workplaces, greater energy and minerals efficiency, and decreased toxics usage among producers (Pyle in Forrant, 2002). If we observe the development process from the long perspective, the more important weight have management and government, because they have an influence on other determinants. We can explain this by analsing main groups as domestic economy, internationalization, government, financial markets, infrastructure, management, science and technology, human capital, biodiversity, energy and preserving the environment. All groups have the same weight. From the long term perspective have quality of government and management stronger weight, because they influence on other determinants. Policies and strategies on governmental and on enterprise level are becoming more important. The EU countries have accepted concept of sustainable development in their documents and also in programme directions (Strategy of sustainable development EU, 2001). The more developed part of EU now finance the development process of other part. New member countries are forced to implement the higher cultural and ecological standards. EU is pussing new members on many ways. Building new infrastructure and improving the quality of business development

are the basic elements for economic growth. Market must be integrated with some elements of regulation, that takes into account the human, cultural and environmental field. Eco-social model of economy is the most important element of sustainability. Measuring the sustainable position means also the valuation of relations among different dimensions: economic, environmental, institutional and social. The environmental dimension is most concerned about natural capital while the social one is most concerned about social capital. There are some problems connected with sustainble economy creation. The balanced development challange takes into account different types of problems: traditional industries have a high share in GDP, low value added on employee in recent years is to low, we have low share of high tech in export, institutional framework is not prepared for entrepreneurship development. There are, by now, a wide range of conceptual frameworks available for representation of economy-environment interdependencies and prospects for sustainability. Economic modelling and evaluation techniques have been extended to environmental domains (natural capital) as a source of raw materials and services, biodiversity, amenities and life support, and waste assimilation capacity. Benchmark selected countries by economic, social, environmental and institutional indicators shows us where we have to act in the way of improving our position.

II. SYSTEM OF INDICATORS FOR SUTAINABLE DEVELOPMENT

Although monitoring and evaluation of development efforts are part of modern development strategies. Lisbon strategy take into account the monitoring process by more than 100 indicators. The national systems of SD allow us the same thing. We think, First, that the SD concept and approach can integrate current strategies for poverty reduction and participation and empowerment. Second, the added value of the SD approach is that it brings the sustainability issue into the fold, thereby establishing the linkages between poverty, environment and participation. Third, and following this rationale, indicators for SD should combine elements particular to poverty, environmental sustainability and empowerment, thus linking more constructively both social and economic aspects of development strategies. In Slovenia we have selected more than hundred indicators according on our statistical bases.

TABLE 1: ECONOMIC INDICATORS OF SUSTAINABLE DEVELOPMENT

1	**ECONOMIC INDICATORS**
1.1	Domestic Economy
1.1.1	Size and growth of economy
	GDP per capita (ppp)
	Growth of GDP
1.1.2	Investment and saving
	Investment in basic things
	Gross domestic savings
1.1.3	Productivity
	Productivity
	Growth of productivity
1.1.4	Economic structure
	Real growth- agriculture, industry, services
1.1.5	Public finance
	Current account balance
	Balance of public finance
	Bilance of foreign trade
	Inflation
1.2	Indicators of innovativeness
1.2.1	Human capital
	Researchers in three sectors
1.2.2	Creation of new knowledge
	Aplication of new patents EPO
	Growth of aplications of new patents EPO
	Aplications of patents EPO per capita
1.2.3	Aplication of new knowledge
	Creation of new enterprises – starts ups (number of permitions)
	Creation of new enterprises – starts ups (number of days)
	Management and the entrepreneurship orientration
	Number of certifications ISO 9000
	Venture capital is available for enterprise development
	Culture risk orientation (flexibility and adaptivity of people).
1.2.4	Financing of innovations
	Expenditures for R&D
	Expenditures for R&D in three sectors
1.3	Infrastructure
1.3.1	Hausing and urbanisation
	Number of rooms per capita
	Urbanization
1.3.2	Transport
	Density of roads
	Density of railroads
	Effectiveness of infrastructure
	Maintaining and development of infrastructure
	Number per persons per car
1.3.3	Energy sector
	Production of primary energy
	Energy selfeficiency
1.3.4	Information society
	Number of hosts per 100 habitants

	Internet users
	Number of mobitel users
	Availability of IT experts on labour market

Source: Kovačič, Slabe Erker 2004

In Slovenia we have chosen three groups for mesuring the economic development: domestic economy, inovativeness and infrastructure. For a valuation of sustainability readiness it is very important that we don't mesure just the technological infrastructure, but also the implementation of new knowledge into business. So the creation of new knowledge is the very impotant sign of sustainablility readiness. The infrastructure is measured by modern methods. The energy sector and also the information society are part of infrastructure.

TABLE 2: SOCIAL INDICATORS OF SUSTAINABLE DEVELOPMENT

2.	**SOCIAL INDICATORS**
2.1	Population
	Growth of population (yearly)
	Density of population
2.2	Employment
2.2.1	Classical indicators of employment
	Number of employed persons under 15 years old
	Employment by sectors
	Unemployment rate
2.2.2	Employment by age groups
	Youth unemployment – 15-24 years
	Employment rate - 55-64 years
2.2.3	Labour market flexibility
	Share of employed persons for shorter working time
	Share of self-employment
	Regulation of labour market and flexibility
2.3	Competitive orientation of policies
	Political system is flexible for economic challenges
	Legal system support the competitveness of economy
	Competition legislation is efficient in preventing unfair competition
2.4	Educational level
2.4.1	Education and knowledge
	The educational system meets the needs of a competitive economy
	The % op people with university diplomas on the field of science and technology (20-29)
	University education meets the needs of a competitive economy
2.4.2	Connectivity and investments
	Higher education achievement
	Total public expenditure on education
2.4.3	Efficiency
	Economic literacy
2.5	Health
2.5.1	Health financing
	Total health expenditure
	Public expenditure (% of total health expenditure)
2.5.2	Health infrastructure
	Health infrastructure
	Doctors on 100.000 people
2.5.3	Health problems
	Mortality due to selected key illnesses
	Life expectancy at birth
	Healthy life expectancy
	Infant mortality
2.6	Quality of life and sustainable development
2.6.1	Quality of life and social inequality
	Income inequality
	Quality of life
	Reported crimes
2.6.2	Sustainable development as a policy objective
	Sustainable development
	Social cohesion
	Quality of government
2.6.3	Sustainable responsibility of managers
	Social responsibility of managers
	Health and environment

Source: Kovačič, Slabe Erker 2004

We have chosen six groups for mesuring the social development: population, employment, competitive orientation of policies, educational level, health and quality of life. Modern way for mesuring the employment level foster us to measure also the labour market flexibility. For business and for capital is good that we have a high labour market flexibility. But for people it is not so well that we have high labour market flexibility. For sustainable society it is important, that we have a good health system. Social sustainability is also obviously linked to economic sustainability. The goal of equality and equal opportunities for access to resources and work for the various social groups, even those most socially disadvantaged or with skills which have less market demand. Local community with a high level of social inclusion enables a more harmonious growth of its

components, lowering the level of internal conflict and hence improving the quality of life of its citizens and the attractiveness of the area. As this figure illustrates, the natural resource base provides the materials for production on which jobs and stockholder profits depend. Jobs affect the poverty rate and the poverty rate is related to crime. Air quality, water quality and materials used for production have an effect on health. They may also have an effect on stockholder profits: if a process requires clean water as an input, cleaning up poor quality water prior to processing is an extra expense, which reduces profits. Likewise, health problems, whether due to general air quality problems or exposure to toxic materials, have an effect on worker productivity and contribute to the rising costs of health insurance.

TABLE 3: ENVIRONMENTAL INDICATORS OF SUSTAINABLE DEVELOPMENT

3.	**ENVIRONMENTAL INDICATORS**
3.1	Energy and environment
3.1.1	**Agriculture and forest**
	Forest cover
	Forest management
	Regeneration expenditure
3.1.2	Energy
	Depletation of non renewable resources
	Energy consumption
	Road transport energy use
	Capacity of nuclear and renewable fuels
3.2	Indicators of pressure
3.2.1	Climate change
	Per capita emissions of greenhouse gases
	Consumption of ozone depleting substances
3.2.2	Emissions
	Emissions of carbon dioxide
	Nitrogen dioxide concentrations
3.2.3	Water quality
	Quality of bathing water
3.2.4	Waste
	Comunal waste
	Dangerous waste
	Industrial waste
3.3	Land
3.3.1	Land
	Agriculture area
	Agriculture productivity
	Environmentally managed land
	Designated and protected areas
3.3.2	Biodiversity
	Native species at risk
	Habitat fragmatation
	Plant diversity in streamsides
	Lakes and ponds
3.4	Infrastructure
3.4.1	Infrastructure
	Car use and total passenger travel
	Short journeys
	Real changes in the cost of transport
	Freight traffic
3.4.2	Water resources
	Licensed abstractions and effective rainfall
	Low flow alleviation
	Abstractions for public water supply
	Demand and supply of public water

Source: Kovačič, Slabe Erker 2004

We have chosen four groups for mesuring the environmental development: energy and environment, environmental pressure, land and infrastructure. It is very important that we find the balance between environmental quality and environmental infrastructure. Some states rangs higher by environmental infrastructure than by environemntal quality. We can't expect that Slovenia will reach so high environmetal infrastructre as Belgium. Brussels, Antwepen are important metropols in Europe, so they need stronger environmental infrastructure than Slovenia. Environmental sustainability is perhaps more immediately understandable: the culture of the environment and its protection, athrough difficult, is today a widespread phenomenon, even at local level. The setting up new business enterprises or the support of economic growth must take the impact of production activity into account, both in terms of the pollution produced and resources consumed.

III. PROBLEMS CONNECTED WITH SUSTAINABILITY EVALUATION

National reports about sustainable development have different set of determinants. Deterninants of SD are: growth of domestic economy, overall productivity, entrepreneurship, quality of management, public finance, quality of infrastructure, quality of institutions, technological development, financial sector, development of information society, employment, labour market, competition regulation, educational level, social inclusion, population change, intensity of energy use, material consumption, air quality, agriculture,

forests, urbanisation, water quantity and quality, biodiversity. Some of statistical indicators have the same definitions (standards) in all EU countries. Some statistical indicators are different (working hours per week can differ 10%). There are many questions regarding sustainable development in evropean economies:

1) Can we evaluate the sustainable development of EU countries on the same way (with the same methodologies) as in our national reports?
2) Can we evaluate the EU region as one entity as opposed to single countries in the case of limited statistical sources (on some fields)
3) Can we benchmark the EU-25 region with the best country (Finland), with the Canada or benchmark the EU-25 region with the EU average.
4) After evaluation of the sustainable development for EU by different methodologies the policy application must be written. The most important development steps are found on the basis on SD indicators. Because of using different methodologies compared to existing studies different solutions for development process are usually found.
5) Can we made the land used policies assesment on the base of sustainable development indicators
6) Can we use modelling for energy sector or for forecasting some of the parts of development process.

Sustainable development has become a widely recognized goal for human society ever since deteriorating environmental conditions in many parts of the world indicate that its sustainability may be a stake. Finding an appropriate set of indicators of sustainable development for a community, a city, a region, a country or even the world is not an easy task. It requires knowledge and comunity's consens of what is important for the viability of the systems involved, and how that contributes to our develpment process. In the contrext of sustainability, it usually implies co-operation or co-ordination between different organisations, sectors and levels of government, and it sometimes requires significant institutional change. The idea is that in the future, all sectors of EU cooperation should be involved in the transition to sustainable development. Stricter environmental regulation will reduce the number of machines of all ages and therefore the size of the firm. However, the same regulation will generally also reduce the average age of the capital stock and thus increase its productivity. It follows that two effect can be distinguished: a downsizing effect and a modernisation effect. Downsizing refers to the reduction of the capital stock. Modernisation refers to the reduction of the average age of this capital stock. Environmental regulation accelerates the removal of older machines from the capital stock that increases its productivity. For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future. Today improving energy efficiency has become a major drive in development and developing economies for protecting the environment. However, renewable energy use, remains a challenge that needs to be squarely met by the world to transform the concept of sustainable development into reality. A paradigm shift is needed in development aid for the energy sector, to support technological innovation rather than the traditional pattern of supporting proven conventional energy technologies. Moving towards sustainable development means better integrating environmental, social and economic concerns over the medium and long term.

In some sectors we can see a real progress toward a sustainable development. The transport sector is one of the areas that has made most progress in producing a strategy forthe transition to sustainable development. The criteria for progress should primarily be aimed at lowering carbon dioxide emissions from road and air traffic, and reducing hazardous and environmentally dangerous emissions from the transport sector. Important is that we minimume the increase in the volume of road traffic that is expected as a result of EU enlargement and other factors is kept as small as possible. It is doubtful whether the transport sector currently covers the costs of the burden it places on the environment. Another area where considerable progress has been made in the work of transition to sustainable development is the energy sector. There are two important goals that shows the muvement toward sustainable development: a long-term commitment to make the use of energy more efficient and to reduce energy use, and the development of safe energy sources that lead to small or no emissions of carbon dioxide. The well-being of a community or nation can be measured in many ways. Traditional measurements often analyze a single issue by itself, such as the number of new jobs in a particular community. But such an approach is one-dimensional, and does not reveal the quality of those jobs or their impact on the local economy. More meaningful than simply new jobs, measuring the number of children living in poverty indicates the relationship of social health to local economic performance. When we speak of sustainable development, we have to not only consider the material and economic aspects, but the multidimesional and multifaceted conjunct that

composes the development phenomenon: its political, social, cultural, and physical asspects. The susatainability of the whole can lean only upon the combined sustainability of its parts. These factors and their respective balances rely on qualitative factors, as the degree of social and political polarization, the values of society and the level of system entrophy.

TABLE 4: IDENTIFICATION OF CRITICAL DEVELOPMENT POINTS FOR SLOVENIA AGAINST EU

Indicator	Relative position (rank) - 1990	Relative position (rank) - 1999	Change in period 1990-1999
Energy intensity	**14/18**	**12/18**	☺
Emission SO_2 per capita	**16/18**	**18/18**	☹
Protected areas (%)	**15/18**	**13/18**	☺
Land under organic treatment	**18/18**	**16/18**	☺
Connectivity with cleaning machines	**8/18**	**16/18**	☹
Share of service economy in value added	**15/18**	**17/18**	☹
GDP per capita (ppp-USD)	**16/18**	**14/18**	☺
Number of physicians per 100000 inhabitants	**16/18**	**16/18**	😐
Expenditure for R&D (% in GDP)	**15/18**	**11/18**	☺
Child mortality (to 5 years)	**13/18**	**15/18**	☹
Tetriary educational attainment	**13/18**	**15/18**	☹
Number of smoked cigaretes per persons	**18/18**	**15/18**	☺
Female to male share in labour force	**15/18**	**14/18**	☺
Life expectancy	**15/18**	**16/18**	☹
Expenditure for health per capta	**13/18**	**15/18**	☹

Source: Kovačič, Slabe Erker 2004

Slovenia marked an improvement in ten years period. It was succesful in lowering the energy intensity, and in improving the classical instruments for environmnetal protection. The agriculture policy improved in the years of enlargment process. Privatization process, institutional harmonization and relationship between academic and business sphere also improved. But there are still some problems on the sustainable way. SO2 emmision are still very high, compared also with new member states. Slovenia needs to increase the investment in environmental infrastructure in the near future. The share of service economy has increased more in other new member countries. The economic structure is not setisfied from the sustainable view. If we want to foster the changing of economic strucure we must improve the entrepreneurship conditions. The Slovenian export in EU countries is on the same position in last years. So, we must make some improvements on entrepreneurship field and also on the technological field. In the health sector could be seen that we don't have enough doctors and nurses per inhabitants. The good connection with doctors is one of the important sustainability indicator. The educational sistem does not meet the chalenges of competitive economy and we don't have enough qualified engineers on labour market (Kovačič, Slabe Erker 2004).

IV. CONCLUSIONS

In the next years the sistem of indicators will improve. Qustionnaire will be more common tool for sustainability evaluation. Questionnaire indicators give as a more qualitative view on competitiveness. The modern way of measuring national competitiveness by using questionnaires allow us to evaluate the dynamic evolution of one economy, the qualitative competitiveness and the expectations of the business managers. Managers often evaluate the quality of business environment in which they operate. They also try to forecast the economic situation of the country in the near future. The concept of sustainable development is hardly integrated in national development policy. The implmentation of the lisbon's strategy will also improve some parts of sustainable development. Slovenian system of indicator has shown the most important development steps in the future. From the system of indicators can be seen that our progress is not integrated enough. Indicators serve as valuable tools for sustainability benchmark. An indicator is something that helps you understand where you are, which way you are going and how far you are from where you want to be. This the main reason why we are going to select indicators for five years period. Indicators allow you to see where the problem areas are and help show the way to fix those problems. Sectors of the economy generate wealth and welfare for households. Enterprises, government and other actors. Economic activity, and indeed households themselves, can however create pressure on the environment, through consumption of resources and output of pollutants. The quality of the environment in turn can impact on the welfare households and individuals and other actors. The actors respond to changes in the state of the economy and of the environment, through behavioral and policy changes which either directly affect the environment, or alter the pressures on it from the economic sectors. Rather than developing a single index of sustainability, for which important measurement difficulties exist, the identification of a confined set of indicators-focusing on each of the three pillars of sustainable development and linked through an organising framework appears as a more useful approach.

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Quantifying the social benefits of WFD: a Hungarian case study

Dr. Zsuzsanna Szerényi, Dr. Sándor Kerekes, Simon Milton, Szilvia Luda, Mária Tarnai[1] and Zsuzsanna Flachner[2]

[1] Corvinus University of Budapest, Department of Environmental Economics and Technology, Fővám tér 8., 1093 Budapest, Hungary

[2] Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences (RISSAC), Herman Ottó út 15., 1022 Budapest, Hungary

E-mail: zsuzsanna.szerenyi@uni-corvinus.hu

***Abstract*: In the frame of an international project called AquaMoney, in which 16 leading research institutions are working together, the same methodology was used in Hungary, Austria and Romania in order to reveal people's willingness to pay to improve the state of the environment along the River Danube. Contingent valuation and choice experiment methods were used in the Által-ér catchment area in the case of Hungary. According to the findings, the population of the region has a significant WTP for implementing restoration projects to increase use and non-use benefits of the river and its catchment area, in line with the goals of the WFD.**

I. INTRODUCTION

The Water Framework Directive has some novel approaches. One of them is the commitment to assessing the environmental and resource costs and benefits arising in pursuance of the WFD [1]. There is no common guideline which can help in this job. The purpose of the AquaMoney project (which is financed by EU 6th Framework Program) is to develop a guideline for quantifying these costs and benefits. Three groups from across Europe worked in the project in three topics: a water quality group, a water scarcity group and an ecological restoration group. Austria, Hungary and Romania belonged to the latter group. A common questionnaire was used in the surveys, which were carried out at the end of 2007 and at the beginning of 2008. In Hungary (in the Által-ér catchment area) a total of 892 people were approached, out of whom 471 were willing to answer the survey questions in face-to-face interviews (52,8% response rate).

The main goals of the Hungarian survey were the following:

- To explore the local population's willingness to pay for the better ecological state of their surroundings,
- To make methodological suggestions on the application of evaluation methods and on the practicability of the results.

II. METHODOLOGY

Two stated preference methods, contingent valuation and choice experiment were used in the survey. Contingent valuation (CVM) is a very popular method used to evaluate non-market goods [see, for example, 2]. This method is able to assess use and non-use values as a part of total economic value; and it is well-established from a methodological point of view. In this survey a payment card with 30 different amounts was used.

Choice experiment (CE) can be regarded as a new method in the area of environmental economics. It was recommended by Adamowitz [3] in the mid-1990 as a good means to quantify costs and benefits in cases where the good being valued is complex and there are conflicting purposes and consequences in the event of an intervention. With the help of CE, different attributes with different levels of the good can be evaluated separately, while CVM is able to estimate the value of a development program as a whole.

III. SURVEY

a) Description of the valuation area

The Által-ér is situated in the Transdanubian part of Hungary. The surface watershed area of the river is 512 km^2. The main river of the watershed is the Által-ér whose length is approximately 50 km. The river source is the Southwestern boundary of the Vértes mountains (at above 275 m above Baltic Sea level), and the river confluences with Danube river at an altitude of approx. 120 m a.B.s.l. The river speed ranges from 0.09 m/s – 0.6 m/s. The Által-ér has 31 tributaries, the two most important of which are the Galla river (which flows through Tatabánya city) and the Oroszlány-Kecskéd River (which flows through the small city of Oroszlány) and joins the Által-ér at Kecskéd Lake. The largest lake is Old Lake Tata (230 ha) in the town Tata.

Two sections of the Által-ér are delineated as 'natural water bodies' with reference to the Article 5 report of Hungary (EU code: HU_RW_AAA206_0000036_S and EU code: HU_RW_AAA206_0000045_M). In the catchment area there are three bigger cities (Tatabánya, Oroszlány and Tata), which were formerly important industrial cities.

Despite of the fact that there are many watercourses on the catchment, there are only few with permanent and high flow. This results in summer-dry stretches, but heavy rainfall can result in flooding. These phenomena are influenced by human intervention (the presence of many artificial lakes – 19 in total – and changing land use patterns). Nearly all of the Által-ér is in 'heavily modified' status.

Land use in the catchment is predominantly agricultural, and contributes to the suspended solid load of the Által-ér. River water is not used in great quantities for irrigation, but provides cooling for industry. Drinking water in the catchment originates from a karstic aquifer.

b) Sample characteristics

Out of the total settlements the populations of 3 bigger and 9 smaller cities were selected for the sample. Altogether, 471 people were asked in face-to-face interviews. The response rate is 52.8%.

The survey was carried out in the area of three microregions (Oroszlányi, Tatai, Tatabányai) using households as units (the total number of households is 59907). During the survey we intended to create a sample representative of age, gender, and level of education. 55.1% of the respondents were male; the corresponding data of the microregions is 48.4%, so in the case of this variable our sample was not representative. Nor was the sample representative for level of education either, mainly because of a higher proportion of the better educated among the respondents. The sample was representative for age. In the region the average family size is 2.57, while it is 3.03 in our sample (thus unrepresentative). Household structure is not similar in the population and the sample. In the region 24,58% of individuals live in a one-person household while in our sample this value is 12.95%. It means that the ratio of multiple person households in the sample is bigger than it is in the region.

The income situation was assessed through the net monthly revenue of the households. 43 respondents (9% of the sample) did not answer the income question. The average net monthly household income was HUF 131,807 (€ 527.23).

c) The questionnaire

The ecological restoration group (Hungary, Austria and Romania) used very similar questionnaires during the survey. All three countries included some extra questions to take into account the local characteristics and habits of the area and respondents.. The questionnaire consisted of four parts: attitudinal issues, perception of water quality and flood, evaluation questions and socio-economic characteristics of respondents.

In the second part, respondents were asked to state their choices using four different choice sets. In the introduction to the choice experiment, a map of the location of the river restoration area was shown to each respondent. In the choice experiment, besides price, two attributes were used: water quality and flood frequency. The levels of water quality were moderate, good and very good (to make the levels of attributes clearer, coloured pictograms were used to emphasize the uses of the water body and to correspond with each quality level), and in the case of flood frequency four levels were defined: flood every 5, 25, 50 and 100 years. Four 'price' levels (3, 10, 30, 50 €/year) were introduced as an increment in the households' water bill. Altogether 8 choice sets with 4 different cards in each set were applied. People made four choices in this part of the survey. The CE was followed up with a debriefing question and respondents who opted out (i.e. chose not to select one of the alternatives) four times were asked why they chose as they did.

The CE was followed up by a CV-question on ecological restoration. Participants were asked to state their maximum willingness to pay in order to help finance (largely unspecified) restoration measures which they were told would change the ecological status and/or recreational potential of the area.

IV. Analysis and Results

d) Attitude analysis

The vast majority of the respondents (almost 90%) use the waters of the Által-ér catchment for some recreational purposes. One third of them visit the waterbodies regularly; the visitors usually go walking or hiking in the area.

The respondents' opinion about the quality of the water is generally bad. 40% said it was bad and 33% thought mediocre, while only 16% considered the water quality good or very good.

Similar proportions of opinions were revealed on the question of whether the water quality had improved, not changed or deteriorated over the previous ten years. Almost every respondent said that an improvement of water quality was necessary.

More than 80% of our sample never had experienced a flood although 3.6% said they had seen at least ten floods in their lives. Generally the population of the area does not expect frequent floods in the future.

e) Results of the CE

During the calculation of the results the first task was to examine the zero answers and to filter out 'protest' answers [4]. In the choice experiment we considered a zero answer those cases where the respondent chose 'Status Quo' in all choice situations (no extra payment involved). This happened in 74 cases (15.7%).After the valuation question we tried to identify the reasons for choosing Status Quo, to identify protest answers as well. A total of 15 answers were taken as protest answers;

the data from these respondents were excluded from the analysis.

Determining willingness to pay with the simplest model (multinomial logit model) only the attributes of the good, namely price, water quality and flood frequency were used. Table 1 shows that the variables of price and water quality gave significant results, each with a sign corresponding to preliminary expectations (price is negative, water quality positive). Parameter estimation of the variable of flood frequency is negative and not significant. The results tell us that the locals are willing to pay for an improvement in water quality, but they are not interested in changes in frequency of floods, so there is zero willingness to pay for this attribute.

TABLE 1 RESULTS OF THE SIMPLEST MULTINOMIAL LOGIT MODEL (B/ST. ERR. VALUES IN BRACKETS)

Attribute	Parameter estimation
Constant	-0.85237905*** (-5.538)
PRICE	-0.02511070*** (-9.231)
QUALITY	0.91202974*** (16.750)
FLOOD	-0.04511127 (-1.079)
Log likelihood function	-1737.204
Adjusted R^2	12.78

*** shows if P < 0,01; **, if P < 0,05; and *, if P < 0,1.

The WTP for a certain attribute is determined by the following formula:

$$WTP_{ATT} = (-1)\frac{\beta_{ATT}}{\beta_{FEE}} \quad [5],$$

WTP_{ATT} is the willingness to pay related to the given attribute, β_{ATT} is the value of the parameter estimation of the attribute, β_{FEE} is the coefficient of the price component.. Our results show that locals (representing households) would pay a yearly amount of €36 on average for the improvement of water quality.

The analysis was repeated using dummy variables for the levels of attributes; results are displayed in Table 2.

TABLE 2 RESULTS OF THE MULTINOMIAL LOGIT MODEL USING DUMMY VARIABLES (B/ST. ERR. VALUES IN BRACKETS)

Attribute	Parameter estimation
Constant	-0.02841519 (0.250)
PRICE	-.02565578*** (-8.605)
F25 (flood once every 25 years)	-0.02665992 (-0.266)
F50 (flood once every 50 years)	-.18892049* (-1.757)
F100 (flood once every 100 years)	-.07471274 (-0.563)
GOOD (good water quality)	0.92109130*** (8.218)
VERYGOOD (very good water quality)	1.83144395*** (16.244)
Log likelihood function	-1736.032
Adjusted R^2	12.77

*** shows if P < 0,01; **, if P < 0,05; and *, if P < 0,1.

Table 2 shows that the results for water quality corresponded with our expectations, as locals are willing to pay for an improvement to the 'good' level as well as to the 'very good' level. Parameter estimation also shows that people would pay more for the improvement to the higher level. The results for flood frequency are contradictory, but generally not significant. The WTP estimated by the coefficients is €35.9/household/year for the improvement from the medium level to good, and €71.4 for medium to very good.

To explore factors influencing WTP a multiple regression model was estimated. Details are not given here, but results show that the significant factors are as follows: gender (women have higher WTP), age (older people's WTP is less), income (the higher the income, the higher the WTP), level of education (also a positive connection) and the variable of water body use (those who use the goods being valued have higher WTPs). All these results correspond to our expectations.

f) Results of the CVM

In the study, the contingent valuation method consisted of asking respondents about their willingness to pay for increasing the size of natural areas along the river - from the actual situation to an ecologically enhanced situation. Respondents were told that, with restoration measures, wetlands and forests could be connected to the Által-ér which would lead to a more natural landscape with water flowing not only through the main channel but also through adjacent creeks and ponds. Respondents were told that currently about 25 % (a quarter) of the wetlands are connected to the Által-ér. Willingness to pay was calculated using a payment card of 30 different amounts starting from zero and with a blank space for indicating another amount. The WTP question was formulated as follows:

"Can you tell me with the help of this card how much you are willing to pay MAXIMUM on top of your yearly water bill over the next 5 years for the restoration of half (alternatively 90 %) of the modified river banks in the Által-ér catchment area back into their original natural state as shown on the map?"

Those respondents who were not willing to make a financial contribution to restoration measures were asked to state why. The number of positive WTPs is 357;three answers were missing. 111 respondents gave a zero answer to the valuation, which is 23.6% of our sample. Most of them said their financial situation was the reason (46), these were considered valid zero answers. We found a total of 11 invalid answers. The results of WTP are shown in Table 3. Using the whole sample the mean WTP is HUF

6,212 (€24.85[7]) a year, per household. The mean willingness to pay calculated from the valid answers is somewhat higher, HUF 6,533/household/year (€26.1).

TABLE 3 RESULTS OF THE WTP QUESTION

Results of the respondents' maximum WTP	
	frequency
WTP = 0	111
Valid WTP = 0	88
WTP > 0	357
Valid positive WTP	357
Missing	3
Mean WTP for the whole sample	**HUF 6,212**
Standard deviation	HUF 9,798
Median	HUF 3,000
Minimum (for positive WTPs)	HUF 50
Maximum	HUF 100 000
N	471
Mean WTP for the valid answers	**HUF 6,533**
Standard deviation	HUF 9,944
Median	HUF 3,000
Minimum (for positive WTPs)	HUF 50
Maximum	HUF 100,000
Valid N	448

The results of contingent valuation tell us that there is a significant difference in the willingness to pay with respect to whether the respondent is a user of the area in question. People who frequent the area offered a notably higher amount on average for restoration measures. This group makes up 83% of the sample (390 respondents), their mean yearly WTP was HUF 7094 per household. Only 55 respondents were non-users, their mean WTP was HUF 2552/household/year (the difference was significant). This result corresponds to our theoretical expectations.

In the analysis of the data of the contingent valuation we examined the socio-economic and demographic characteristics influencing willingness to pay. In CVM literature, the explanation of open-ended WTP estimates is generally done through a model called the 'valuation curve' or 'bid curve', where WTP is estimated as a function of possible explanatory variables.

$$WTP_i = f(X_i),$$

where WTP_i represents the maximum willingness to pay of the i^{th} individual and X_i is a vector composed of independent variables affecting the individual values.

The most general specification of the bid curve assumes linear connection between the variables:

$$WTP_i = \beta * X_i + \varepsilon_i,$$

where β is a vector composed of parameters describing how a change occurring in a given independent variable effects the WTP, and ε_i is the random error component comprising the effects of factors unobservable by the researchers (distributed normally with an average of 0 and constant variance) [9]. In case there are several zero WTP in the sample, the so-called Tobit model [6 in 7] is more appropriate for analysing the data. The Tobit model can be written as

$$WTP_i = \begin{cases} \beta * X_i + \varepsilon_i, \text{ if WTPi} > 0 \\ 0 \qquad otherwise \end{cases}$$

We checked the effect of several variables and used various mathematical-statistical models in the analysis. In Table 5 the marginal effects estimated by the Tobit model are displayed. Table 4 shows the list of independent variables used in the models.

TABLE 4 INDEPENDENT VARIABLES OF THE MULTIPLE REGRESSION MODEL

Variable	Description
MEMBER	The respondent is member of some environmental or conservational organization (dummy, 1=yes, 0=no)
DRINK	Uses the well to get drinking water (dummy, 1=yes, 0=no)
RESTAUR	Using Által-ér – visiting restaurants (1=yes, 0=no)
AGE	The respondent's age (years)
EDUCAT	The respondent's level of education (1=primary school, 2=professional education, 3=high school, 4=higher education/college, university)
INC_HUF	Mean net monthly income of the respondent's household (HUF)
DUMDONAT	The respondent has granted financial or other support to any environmental or conservational organization in the past two years (dummy, 1=yes, 0=no)

The sign of the parameters generally accords to preliminary expectations. The strongest (positive) effect is the environmental organization membership variable (MEMBER). People with such membership show a significantly higher WTP than non-members (the difference is HUF 10,570). Income (INC_HUF) also has a strong, positive effect; that is, respondents with higher incomes offered more. A HUF 10,000 increase in household income brings a HUF 139 increase in WTP.

TABLE 5 RESULTS OF THE MULTIPLE TOBIT MODEL (B/ST. ERR. VALUES IN BRACKETS)

Variable	Marginal effects (Tobit) Parameter estimation (b/st. err.)	Mean of variables
Constant	984.1206 (0.678)	
MEMBER	10570.28 (5.877)***	0.04529
DRINK	3609.6731 (1.796)*	0.0324
RESTAUR	3302.549 (4.356)***	0.5310
AGE	-74.527 (-3.28)***	42.4453
EDUCAT	504.438 (1.642)	2.7128
INC_HUF	0.01398 (4.816)***	204343.174
DUMDONAT	-3230.489 (-3.299)***	0.1801
Log-likelihood	-3632.507	
Sigma	-67.3851	
N	410	

Dependent variable: willingness to pay for the development program

*** shows if P < 0,01; **, if P < 0,05; and *, if P < 0,1.

The parameter of age has a negative sign that matches earlier experiences; the older offer less for

[7] 1€ = HUF 250

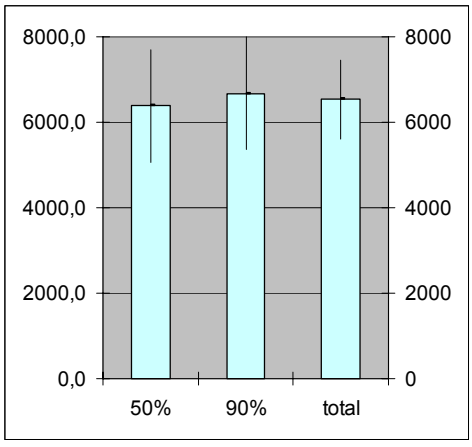
the ecological restoration programs. A increase of a year in age corresponds to a HUF 74 decrease in WTP. People who use their well water for drinking (DRINK) have a higher WTP compared to those who do not us the water for this purpose, or do not have their own well (the difference is HUF 3,609). Respondents visiting Által-ér, especially restaurants (RESTAUR), offer more (positive significant parameter estimation), their willingness to pay is higher by HUF 3,302).

In contrary to expectations, those who donated to environmental or nature conservation purposes in the past two years (DUMDONAT) offered less in the present survey (by HUF 3,230). This may be due to these respondents' feelings of having accomplished their duties in supporting environmental causes, so they can not (or do not want to) make further expenditures.

The sample was also divided by proportion of the catchment area to be restored. Half of the sample (222 respondents) were asked to evaluate the program which related to increasing the proportion of natural areas from the present 25% to 50%, the other half evaluated the increase from the present 25% to 90% (each respondent was given only one type of these two programs).

The WTP of these two subsamples do not differ significantly; the mean WTP of the 50% subsample is HUF 6,385, while in the 90% subsample this value is HUF 6,679 (€ 25.54, and € 26.71, respectively). This shows that the respondents did not consider the scope of the improvement, their willingness to pay for the restoration programs is independent from this parameter (see Figure 1.)

3. FIGURE COMPARING THE MEAN WTP OF THE WHOLE SAMPLE AND OF THE SUBSAMPLES EVALUATING THE 50% AND THE 90% SCENARIOS (WITH CONFIDENCE INTERVALS)



g) Aggregation

Total economic value can be calculated using the individual willingness to pay and the stakeholder population. In the three microregions involved (Oroszlányi, Tatabányai and Tatai microregions) there are a total of 59,907 households. While aggregating we have to consider not only the size of the population, but also the response rate. In our sample it was 52.8% (that is, 421 people were not willing to answer our questions). Two assumptions can be made about the WTP of those who refused to answer our questions:

- First, we assume that these WTPs follow a similar distribution and profile to the WTP of the respondents, thus the mean WTP will be the same as the WTP calculated from the sample.
- Second, we assume that those who did not answer, have zero WTPs.

If we treat respondents and non-respondents alike, the total willingness to pay is HUF 271 million (€1.084 million) a year, and for the five years HUF 1.375 billion.

Considering the non-respondents' willingness to pay to be zero, the mean value per household is HUF 3,368, resulting in HUF 201 million (€804,000) yearly WTP for the total population, HUF 1.008 billion over five years.

V. CONCLUSIONS AND LIMITATIONS

The results of the survey tell us that according to both the contingent valuation (CVM) and the choice experiment (CE) the local population has a positive willingness to pay for the improvement of the environment.

CVM revealed a significant difference between the WTP of the users and non-users. Those who had not visited the area at that time would pay a mere 36% of the mean willingness to pay of the regular visitors.

In the contingent valuation two development programs were presented, each with a different proportion of the area to be restored to the natural state (from the present 25% to 50% and from the present 25% to 90%). The sample was divided randomly into two halves, each subsample was presented one of the programs. Our theoretical assumption was that the greater the change, the higher the WTP, but tests showed that although the subsample of the 90% scenario has a slightly higher WTP, the difference is statistically insignificant, so the hypothesis of the locals' sensitivity to the scope of the change had to be refused.

A number of explanations can be given for this contradictory result:

(1) each respondent was evaluating a single change, so they could not perceive the difference, and all households offered a significant part of their disposable income; (2) the increase of the natural state areas to 90% seemed exaggerated or unfeasible to respondents which is why they did not show a higher WTP.

In the CE we focused on two attributes: water quality and flood frequency. The local population was only willing to pay for water quality changes,

flood frequency – in correspondence with our expectations - was not important for them. We still tested this attribute so as to use the same questionnaire in the three participating countries, Austria, Romania and Hungary, but flood frequency proved to be irrelevant in Hungary.

In the case of the WTP for water quality we experienced sensitivity to scope, as locals volunteered to pay significantly less for an improvement from medium to good than for the change from medium to very good. There is no positive willingness to pay for the decrease in flood frequency. What follows from this is that the individual appreciation and stated importance of the attributes is influenced significantly by the local circumstances, and we should consider these findings in further use of the results, e.g. benefit transfer.

According to theoretical research the distance between the good valued and the respondent's residence are in inverse proportion: the closer one lives to the good in question, the higher their WTP is. The Hungarian case study has not yielded the theoretically expected result: in contingent valuation distance did not prove to be a significant factor while in the choice experiment we received a contrary result from expected: people living further from the waterbodies had a greater WTP. Resolution of this finding requires further research on the relationship of distance-WTP, as the greatest distance in this study was a relatively small 20 kms.

An important point about this survey is that it is the first time Choice Experiment was used for the evaluation of environmental goods in Hungary.

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Implementation of Water Framework Directive obligations in Hungary: estimating benefits of development activities in two pilot areas

Dr. Zsuzsanna Marjainé Szerényi, Dr. Ágnes Zsóka, Dr. Judit Rákosi
Corvinus University of Budapest, Department of Environmental Economics and Technology,
Fővám tér 8., 1093, H
E-mail: agnes.zsoka@uni-corvinus.hu

***Abstract*: The implementation of the Water Framework Directive entails several tasks for EU member states, including Hungary. One important issue is the estimation of economic benefits resulting from improvement of water quality and condition. Contingent valuation has been used in Hungary in two pilot areas: at the natural river Túr and the artificial, less important Kállay-channel. Both areas can be found in the North-East of the country. WTP is similar for both water bodies: households are ready to dedicate only a small proportion of their monthly income, equivalent to 0.5%, for an improvement in the state of the water bodies.**

I. INTRODUCTION

The main issue arising from the project "Promoting Implementation of Water Framework Directive Phase II" [1] was how to select the necessary measures to improve the state of water bodies in order to fulfil the requirements of the Water Framework Directive (WFD) in Hungary – taking into account alternatives in the light of the need for similar cost efficiency. Due to this requirement, further criteria are required to assist in decision making, and for this purpose, benefits stemming from the indirect impacts of measures taken can be considered.

II. METHODOLOGY

In the case of environmental goods with a significant non-use value component, stated preference methods are most applicable, according to the literature [2]. In this research contingent valuation has been used which is an economic assessment method, aiming to explore personal preferences in a direct way, primarily in connection with determining the economic value of non-market goods [3,4, 5]. With the help of a questionnaire a hypothetical market is created where some change in the state of the goods under consideration is traded, and the willingness to pay/accept a change in the state of those goods is explored. The procedure assumes that amounts of payment/acceptance are appropriate to reveal the preferences of participants.

In Hungary, three surveys have been carried out formerly via this method: one regarding the value of a water quality improvement to the Balaton [6], the other connected to evaluating the impact on nature of the Slovakian initiated diversion of the Danube on Hungary's northern border [7], and the third case study related to the evaluation of development of cave system in Buda Hills [12].

In the frame of the project outlined in the paper, nine diverse pilot areas were selected and a model for cost efficiency analysis was tested. Regarding intervention, it is also very important to discover which benefits can be contributed to high cost solutions and whether costs are disproportionately high. Accordingly, analysing the consequences of indirect impacts with economic methodology also proves necessary. On this basis, primary research has been carried out in two case study areas: the catchment basin of Túr and Kállay-channel, both located in North-Eastern Hungary, at one of the poorest parts of the country. Túr is a natural river with significant recreational use value, while Kállay-channel is an artificial river used less for recreational purposes and accorded less importance. These facts are liable to influence willingness to pay.

The main objectives of our research were:

(a) To explore whether there is willingness to pay (from local inhabitants) for development of the sample catchment areas and, if yes, how they evaluate through their WTP measures stemming from the WFD (such as improving the state of flora and fauna and the beauty of landscape).

(b) Based on these results, to formulate recommendations which can help estimate the order of magnitude of benefits regarding development measures in practice.

III. SAMPLE CHARACTERISTICS

Settlements were selected by size (three categories) and distance from the water body (two categories); sampling units were households (random selection). Settlements with a small number of inhabitants are prevalent in the area. The response rate was very high (93.5%), due to the method of inquiry (personal interviews). The most important socio-economic characteristics of the samples are summarised in Table 1.

Obviously, there are several similarities in the characteristics of the pilot areas, except the income which is significantly lower in the case of inhabitants

living near the Túr, where unemployment rate and tat of proportion of pensioners is higher.

Elderly people and respondents with higher qualification are somewhat over represented in the both samples.

Table 1: Socio-economic characteristics of the samples

Feature	Túr	Kállay-channel	County Szabolcs-Szatmár-Bereg*
Male (%)	42.3	53.8	46.9
Age			
18-29	20.9	21.1	21.9
30-39	16.7	21.1	19.2
40-49	13.7	19.3	17.9
50-62	28.6	26.5	20.4
63-	19.2	12.1	20.6
Size of family (capita)	3.14	3.27	3.06
Number of children under 18 in the family (capita)	0.56	0.68	n.d.
Number of employed (capita)	2.01	2.13	n.d.
Income (HUF)	125 th	156 th	127,4 th**
Unemployment rate (%)	8.4	5.8	8.9
Qualification			
Less than 8 classes	6.4	4.5	26.4***
Primary school	20.5	13.9	28.3
Professional Training	29.1	33.6	21.9
College	27.4	30.0	15.6
Graduation	15.0	16.1	7.6
Higher education	1.3	1.8	n.d.
Other			
No. of respondents	234	224	

* Source: Central Statistical Office, 2005.

** County data refer to gross per capita income, while sample data reflect net household income.

*** Source: Central Statistical Office - Census 2001.

IV. ANALYSIS AND RESULTS

The questionnaire consisted of the following: survey circumstances, attitudes, economic valuation questions, and socio-economic characteristics of the sample.

a) Attitude analysis

Most frequent activities at the water courses were recreational, including walking, swimming and angling. Somewhat surprisingly, a significant fraction of surveyed inhabitants do not pursue any activities related to these water bodies. The overwhelming majority of the users go to a substitute water body as well; primarily to the Tisza.

The perception of water quality was rather bad or average in the area than good. Respondents ranked their priorities for improvements; the order of importance (top-down) is the same for both water courses:

1. the state of water and waterside flora and fauna,
2. favourable change in landscape beauty,
3. improvement of recreation objectives

This result clearly signals the preference of non-use values in respondents' judgements. Comparison of regular users and non-users showed that both groups gave the same average rank order, so the ranking seems to depend less on use than on the value system of respondents. Possible improvements increased potential use of the waters.

b) Willingness to pay analysis

The most important part of the survey was the valuation questions section. First, participants were asked whether they supported the outlined programmes or not. Related to Túr, 83.1% of respondents declared their support, at the Kállay-channel 74.2%.

Regarding contingent valuation, monthly household-level willingness to pay has been examined. It is necessary to be noted that choosing household income underestimates WTP compared to individual level, while monthly payment leads to a slight overestimate in comparison to yearly payment. In fortunate cases the two cancel each other out.

One of the most critical issues in the survey was the selection of payment vehicle. During recent years, the Hungarian economic situation has increased poverty. Gas and electricity prices have increased, as have water bills. Therefore, payment into a dedicated fund was chosen as vehicle, to be maintained over a ten year period (instead of using further rise in water prices as vehicle).

A first step in WTP analysis is screening out invalid answers. According to the literature, a part of all zero answers and high-end WTPs are outliers. In the case of zero answers, two categories can be identified: valid and invalid answers. A zero amount can be regarded as valid if there is an economic rationale behind it – such as a low income level which prevents respondents making sacrifices for this purpose, or if the examined area genuinely does not have any positive value for respondents [8].

In both samples, about one third of respondents gave zero bids. The reason behind mainly was low income which is understandable knowing the poor economic situation of the area, the relative poverty of inhabitants compared to the country average as well as high unemployment rate Additionally, lacking use of the water course was mentioned but in a much lower proportion. There were altogether

eight respondents whose replies were judged invalid. They seemed to have problems with the program or its implementation and protested with a zero bid.

The majority of people would give around HUF 1000 for program implementation. WTP results are summarised in Table 2.

Table 2: WTP in the two pilot areas

Results of maximum willingness to pay of individuals	Túr	Kállay-channel
	frequency	
WTP = 0	73	87
Valid WTP = 0	68	84
WTP > 0	160	138
Valid positive WTP	157	138
Missing	–	–
Mean WTP	**HUF 931**	**HUF 1010**
Variance	HUF 1 527	HUF 2 358
Median	HUF 500	HUF 500
Minimum (for positive WTP)	HUF 8	HUF 42
Maximum	HUF 10 000	HUF 30 000
Valid N	225	222

The main reasons mentioned behind positive WTP are:

- improvement of water quality and state of the river,
- importance of preservation of the water course for the future.

Reasons like 'affection for the river', 'a draw for tourists' or 'frequent use' appeared to be less motivating reasons in the case of Kállay-channel than river Túr. From these explanations we conclude that non-use values are highly regarded.

Amenity misspecification is a frequent phenomenon during contingent valuation. In order to eliminate and analyse it, we added the following question to the valuation section:

"You said you are willing to sacrifice a certain amount of money for improving the state of Túr/Kállay-channel. However, people often have a problem when separating the amount specified for one single program in contrast to that offered for a whole environment protection programme. Would you say whether you offered the specified amount for improving the state of Túr/Kállay-channel only or for other environmental purposes as well?"

If respondents offered the amount for other objectives as well, they had a chance to modify the amount in the frame of an open-ended question. Results are very similar in both pilot areas. Slightly more than half of the people who offered positive amounts did not modify their original bids; the other (near) half reduced them. The majority of the latter group reduced the amount by almost half their original bids. Average degree of amenity misspecification is 75.5 % at Túr and 77.1% at the Kállay-channel. Calculating with this, the average maximum willingness to pay decreased to HUF 649 for the Túr exclusively and to HUF 819 in the case of the Kállay channel.

c) Regression analysis

An important step of contingent valuation is the estimation of the bid curve, which was done by multivariate regression analysis. During this process the factors affecting willingness to pay, their direction and size are estimated in a model.

In CVM literature, the explanation of open-ended WTP estimates is generally done through a model called the 'valuation curve' or 'bid curve', where WTP is estimated as a function of possible explanatory variables.

$$WTP_i = f(X_i),$$

where WTP_i represents the maximum willingness to pay of the i-th individual and X_i is a vector composed of independent variables affecting the individual values.

The most general specification of the bid curve assumes linear connection between the variables:

$$WTP_i = \beta * X_i + \varepsilon_i,$$

where β is a vector composed of parameters describing how a change occurring in a given independent variable effects the WTP, and ε_i is the random error component comprising the effects of factors unobservable by the researchers (distributed normally with an average of 0 and constant variance) [6]. In case there are several zero WTP in the sample, the so-called Tobit model [10, in 11] is more appropriate for analysing the data. The Tobit model can be written as

$$WTP_i = \begin{cases} \beta * X_i + \varepsilon_i, \text{ if WTPi} > 0 \\ 0 \qquad otherwise \end{cases}$$

As a dependent variable, both the maximum willingness to pay has been used which was mentioned first, and the one corrected for amenity misspecification. During first estimates, several characteristics were included in the model and finally the ones kept which provided the best fit – these will be presented in the following explanation.

Table 3 provides an overview of the variables included in the model.

Table 3. Descriptive statistics of the variables influencing the WTP included in the model

	Túr	*Kállay-channel*
Explanation of the variable	***Average and proportions***	
WTP offered only for the Túr/Kállay (HUF)	617	847
Net monthly income of the family taken as the central value of the category (HUF)	125 120	149 754
Frequent walks by the Túr (1 - yes, 0 - no)	0.28	
Indicated more frequent use in case the condition of the Túr/Kállay-channel were to improve (1 - yes, 0 - no)	0.70	0.74
Pursues agricultural activity (1 - yes, 0 - no)	0.42	
Distance of the locality from the Túr as a dummy variable (1- up to 8 kms; 0 – above 9 kms)	1.64	
Use of the Túr as well as substitutes (1 – yes, 0 – no)	0.5	
Frequently use of the Kállay for any activity (1: yes, 0: no)		0.12
Age of the respondent by age group (1: 18-29 years, 2: 30-39 years, 3: 40-49 years, 4: 50-62 years, 5: above 62 years)		2.86
Place for pursuing water related activities (1: only at Kállay, 0: nowhere, only elsewhere, at both)		0.12
	N = 208	N = 203

As expected, distance from the waterway decreased WTP significantly, while higher income, frequent use and indication of more frequent use after implementation increased it.

In case of the Kállay channel, current use has the greatest influence on the WTP, so much so that anyone using the channel frequently (at least once a month) for any activity would be willing to pay 1282 Ft more for the program than those using it less often or not at all. This is a very high additional amount and clearly indicates the importance of sensitivity analysis.

The age of the respondent is inversely related to the willingness to pay. A 10 year difference in age results in a 164 Ft difference in WTP, where with the increase of age each age group is willing to pay 164 Ft less than the previous one. Results are detailed in Table 4.

d) Aggregation

In contingent valuation, determination of the average willingness to pay of individuals or households is followed by the aggregation of the data, during which obtained results are projected for the entire population involved. The data need to be aggregated for the group of people whose welfare is affected by the program to improve the condition of rivers Túr/Kállay. According to Santos [9] the size of the population used in the aggregation process is the most important and most influential factor (next to the WTP) in the estimation of benefits. This problem also arose in this case, especially concerning the Túr.

The simplest method of aggregation is to multiply average willingness to pay with the number of affected households as they were the units of observation.

Table 4. Multivariate models estimated by Tobit model (marginal values, t-values are in parentheses)

	Túr	*Kállay-channel*
Variable	***Parameter estimate***	
Net monthly income of the family taken as the central value of the category (Ft)	0.0022*** (3.06)	0.0037*** (2.78)
Frequent walks by the Túr (1 - yes, 0 - no)	312.055** (2.55)	
Indicated more frequent use in case the condition of the Túr/Kállay-channel were to improve (1 - yes, 0 - no)	218.209* (1.90)	1145.903*** (3.63)
Pursues agricultural activity (1 - yes, 0 - no)	217.815** (2.17)	
Distance of the locality from the Túr as a dummy variable (1- up to 8 kms; 0 – above 9 kms)	245.06** (2.21)	
Uses the Túr as well as substitutes (1 – yes, 0 – no)	231.478** (2.06)	
Frequently uses the Kállay for any activity (1 – yes, 0 – no)		1282.126*** (4.11)
Age of the respondent by age group (1: 18-29 years, 2: 30-39 years, 3: 40-49 years, 4: 50-62 years, 5: above 62 years)		-164.436* (-1.84)
Place for pursuing water related activities (1: only at Kállay, 0: nowhere, only elsewhere, at both)		871.80*** (2.80)
Constant	-583.145*** (-3.98)	-1438.911*** (-2.89)
LL	-1289.39	-1234.586
LR (chi2)	51.60	74.28

Prob> chi2	0.001	0.001
Pseudo2	9.9	9.9
	N=208	N=203
	148 uncensored observations	128 uncensored observations

***, if P < 0,01, **, if P < 0,05; and *, if P < 0,1.

Dependent variable: maximum willingness to pay corrected for amenity misspecification

Based on the average WTP values (649 HUF for the Túr and 819 HUF for the Kállay), the monthly willingness to pay of families for the improvement of water quality of the Túr and its natural circumstances is 7.9 M HUF, which is 94.5 M annually. For the Kállay catchment area it is 13.9M HUF per month, meaning 166 M HUF per year.

The aggregation is distorted by the fact that only households living on the designated sample areas were included into the calculation. Meanwhile, there are two opposite effects which should be taken into account. First, the dense network of surface waterways in the observed areas means that the population can relate to and attach value to several of those waters. In the survey only the use of other waterways was asked, not the actual value attached to them. This could result in an overestimation of household WTP. The other distorting effect lies in determining the area where households are actually involved in the issue. The Kállay channel draws only local attention, while Túr can be regarded as of national importance, therefore the entire population of the county or even the country should be considered (their WTP, however was not part of the research).

Due to the critical points of the research, the estimates provided almost double the annual benefit in case of an artificial waterway of local significance than for a nationally important river in natural condition, with substantial recreational potential. This was solely due to two factors: differences in income and the number of households. When using the results for environmental policy purposes, it is very important to consider these factors.

V. CONCLUSIONS, LIMITATIONS

While comparing the data from the two sampling sites, we found the following: the proportion of respondents who expressed zero willingness to pay was slightly lower in case of the Túr (31%) than the Kállay (40%), despite the fact that the average income is significantly higher at the latter. The explanation of the zero bids however was similar, with the majority not willing to pay because of their low income (60% of the zero bids in the Túr sample and 66% in the Kállay sample) and not because the waterway is of no importance for them.

The average amounts offered represent practically the same proportion of incomes in both areas, considering sum dedicated only to the good in question, this was 0.56% for the Kállay and 0.5% for the Túr. This result does not correspond to prior expectations that willingness to pay in case of the Túr would be significantly higher, as Túr is a natural river with considerable tourist value, while the Kállay channel is artificial (although providing a natural effect) and is far less attractive from the perspective of tourists. It should be noted that offering a similar amount from a lower income is of higher significance.

The transferability of the findings is limited by certain factors. Only residents of the sampling areas were surveyed, excluding other groups who live outside but may also be affected. The survey showed that willingness to pay decreases with distance from the waterway, but as the sample areas were relatively small, we cannot estimate this effect over larger distances. The high proportion of zero bids in both samples is problematic, even though there are relevant economic reasons behind.

VI. POLICY IMPLICATIONS

The results of the survey can be used primarily in cost-benefit analyses to provide a basis for future programs, to evaluate and decide which option is more favourable aiming to achieve water quality standards set in the Water Framework Directive. Results can also be used in coordinating international efforts for improving water quality of catchment areas and in public discussions.

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Valuation of Biodiversity: Deliberative Monetary Valuation combined with qualitative assessments in the field of agriculture

Zoltán Szabó
Corvinus University of Budapest, Fővám tér 8, 1093, Budapest, Hungary
E-mail: szabo.zoltan@uni-corvinus.hu

Abstract: **This paper combines a qualitative and a quantitative assessment in the field of valuating biodiversity. A group deliberation technique (Deliberative Monetary Valuation) is supplemented by a contingent valuation (CV) survey. An exceptionally large number of focus groups provided basis for comparing the results with CV. We present evidence that deliberative technique tackles some of the limitations of CV. Results indicate a relatively high social value of biodiversity improvements in Hungary.**

I. INTRODUCTION

The main objective of this paper is the macro level valuation of biodiversity improvements related to agricultural activities.

Central-Mezőföld, Hungary is one of the best-endowed areas in Europe in terms of plant cultivation, therefore ideal for assessing the impacts of agriculture on biodiversity. 'Biodiversity benefits people through more than just its contribution to material welfare and livelihoods. Biodiversity contributes to security, resiliency, social relations, health, and freedom of choices and actions. Changes in biodiversity due to human activities were more rapid in the past 50 years than at any time in human history, …' [1]. Biodiversity underpins ecosystem services. 'Ecosystem services are the benefits that people obtain from ecosystems. Examples include food, freshwater, timber, climate regulation, protection from natural hazards, erosion control, pharmaceutical ingredients and recreation.' [2].

'Improved valuation techniques and information on ecosystem services demonstrate that although many individuals benefit from biodiversity loss and ecosystem change, the costs borne by society of such changes are often higher.' [1].

II. CRITICAL ISSUES AT VALUATIONS

In the literature only limited number of studies can be found which deal with valuation of biodiversity related to agriculture. Most valuation studies in this field use the Contingent Valuation (CV) method. An extensive research has recently been carried out in describing, distinguishing and categorizing biodiversity functions [1], [3]- [4].

In environmental valuation techniques preferences are generally regarded as existing *a priori*. We disagree with that notion and state that at monetary valuations of unfamiliar goods (e.g. biodiversity) respondents may lack solid preferences. Gowdy and Erickson cite several problems typical at eliciting preferences with CV surveys (i.e. lexicographic preferences, endowment effects, hyperbolic discounting, loss aversion, part-whole problem) [5]. Spash notes that assumptions that preferences are pre-existing, stable, and complete across all choice sets, and can therefore merely be called upon, no longer seem tenable [4].

Deliberative Monetary Valuation (DMV) or Market Stall is a two session approach, with the first one dedicated to discussing the issues, deliberating and the second to monetary valuation [6]-[8]. Although in literature we found limited experiences with DMV, the methodology may theoretically allow preferences to be formed during the discussions. Deliberative processes thus may lead to better outcomes. CV method has been noted to produce a payment which has more in common with a charitable contribution than a market exchange value [6].

Choices made in isolation and those made in a group setting may results in different values. Alvarez-Farizo et al. tested for whether a difference exists between individual and collective behaviour [6]. Our aim was to pursue community preferences rather than the aggregation of individual preferences. DMV is a participatory method with the aim of differentiating between individual and social values. The advantages of DMV include among other things time for reflection, potential for information gathering and group deliberation. We therefore hypothesized that valuation would result in significantly different value if a forum for discussion is provided.

The elicitation of monetary bids to pay for biodiversity preservation fails as a measure of welfare changes due to the prevalence of lexicographic preferences [9]. A common notion at valuation by CV of unfamiliar goods such as biodiversity is the relatively high ratio of protest responses. Protest bids may be an indication of lexicographic preferences. It is up to the researcher how to tackle this problem. Our hypothesis was that group deliberation contributes to well-formed preferences, thus the ratio of protest responses can be reduced.

The aim of the research is to offer economic tools that take proper account of the true economic value

of biodiversity and ecosystem services. Most biodiversity and ecosystem benefits are public goods that have no price. DMV is an approach for solving this problem. In this research we carefully chose the methodology to avoid the problems outlined above. A split sample allows for the testing of the impact of group deliberation. Instead of eliciting willingness to pay (wtp), we aimed at social price.

III. Methodology

Valuing biodiversity is a complex issue, so methodological pluralism is considered crucial, hence a qualitative as well as a quantitative approach is applied. The qualitative approach involves the use of focus groups with residents, farmers and hunters.

An unusually large number of deliberative forums provided the basis for the application of a relatively unproven methodology. The large number of focus groups applied in this research aims to ensure the comparability on a significant level.

To test the influence of deliberation techniques the CV survey was also administered to 152 respondents allowing comparing results with and without deliberative session.

Overall 8 focus groups with a total of 85 participants were held amongst residents of Central-Mezőföld (one group consisted farmers as well). Besides residents, two focus groups with conventional farmers and one with farmers applying organic farming technologies were also held. This later group was omitted from the quantitative valuation (questionnaire) for its bias at recruiting participants. A focus group with hunters was also held to elaborate on direct ecosystem services (see Table 1). An additional focus group was dedicated to testing of questionnaire.

TABLE 1: Structure of Focus groups held in Central-Mezőföld

Participants	Number of focus groups	Overall number of participants
Residents	8	85
Farmers	3	23
Hunters	1	9
Overall	12	117

Focus groups varied between 5 and 13 participants in size and followed a semi-structured interview lasting one and a half hours. Discussions were facilitated by a professional moderator, who also ensured neutrality.

The first 3 focus groups were held with farmers in order to identify indirect ecosystem services.

The purpose of 8 focus groups with residents was twofold. Firstly, it is a qualitative assessment of direct ecosystem services and secondly, it is a monetary valuation with the help of a CV questionnaire (DMV). 8 focus groups were thus repeated as a DMV. The second session begun with the completion of the questionnaire, followed by consensus seeking deliberation.

"Social value under stated preference techniques is normally calculated by asking individually focussed valuation questions of respondents, who decided as individuals, and then conducting some aggregation procedure (with or without weighting, exclusion of protestors and outliers, and discounting). Yet there is no reason to expect this to equate with an already aggregated response" [6].

Deliberative processes place individuals in the role of representing society not their own interests. One of our main assumptions was that aggregated wtp values do not equal social value. Instead of the standard willingness to pay, we used "fair price" ('How much society is to pay?'). The second session of focus groups, by seeking consensus, aimed to directly obtain an aggregated social value.

With standard wtp questions the public good aspects prevalent in the scenarios could lead to charitable contributions (i.e. warm glow, or buying moral satisfaction). Therefore the choice of trade-off with other public goods or activities or publicly funded projects was considered better reflecting opportunity costs, thus arriving at a social value. Comparison with art, sport and 'cleanliness of settlement' also allowed for indication of a social price. These comparisons produce values that are already aggregated.

The CV builds on the survey used by Christie et al. [10]. For the questionnaires two scenarios were developed, both related to changes in agricultural technology. The first one implies a modest improvement in biodiversity, while the second one aims a healthy land use structure with up to doubling of the diversity. The two scenarios were described, with the help of cards and pictures, to respondents to have different impacts on Central-Mezőföld's diversity of animals, plants and habitats. The *Switch from conventional to environment friendly crop production program* would result in a 10-20% increase in diversity of plant species. Healthier field strips would provide more food sources for birds. The *Agro-environmental program* would result in up to doubling the diversity of plant species. Extended and healthier field strips and loess-valleys would provide lot more food sources for birds and habitats for insects, butterflies and mammals.

IV. Results of qualitative assessment

Facing the question whether focus group participants perceive any changes in biodiversity in their neighbourhood area, the most common answer was a definite yes. In all focus groups participants had perceived the decline of certain species, the appearance of previously non-native species and habitat loss. Species such as partridge or swallow

were frequently mentioned as being seen their number decline. Partridge was considered regionally extinct. On the other hand the proliferation of invasive species, such as ambrosia, and pests was mentioned as an example of the deterioration of the environment. Irreversibility, fragility of the environment, feeling of loss, etc. frequently appeared in the discussions.

The privatisation of cooperative farms was believed to be the main reason behind the perceived changes in the environment. According to the general view of focus group participants the transition to market economy around 1990 saw the decline of agricultural cooperatives followed by a shift in agricultural practices. Since then pesticide and inorganic fertiliser use were reduced. Many of the participants claimed that agricultural expertise and competence in general had lost strength as many farmers acquiring small land lacked the knowledge of modern farming technologies. These small scale farmers had been less careful with the application of pesticides. On the other hand shelterbelts fell prey to pooling of smaller plots into larger plots in order to facilitate the movements of agricultural machines.

As expected, there was a major difference between the views of the two types of farmers on the impact of agricultural technologies on biodiversity. The focus group with farmers using environmentally friendly or organic technology elaborated on the negative effects of pesticide and inorganic fertiliser use on soil fertility, natural control of pests and pollination. The importance of earthworm and ladybug, or even the lack of them, was well discussed and considered of crucial importance. Agro-biodiversity, such as traditional fruit-tree kinds, also turned up as present breeds are more vulnerable. Unexpectedly to us habitats, such as shelterbelts and field strips frequently turned up. In such a predominantly agricultural land these habitats provide the last refuge for wildlife. We note here, that this issue was also considered of crucial importance in most focus groups with residents. Conventional farmers dwelled on the substitutability of ecosystem services by inorganic fertilisers, pesticides and machines.

As described previously one of the prime objective of focus groups with farmers was to deliberate on indirect ecosystem services. Out of the original set of indirect ecosystem services of 9 items identified by literature review [11] and adapted to Central-Mezőföld, the list was reduced by the participants to four most important ones: soil fertility, natural control of pests, pollination and control of invasive species.

It is important to stress that farmers were aware of the benefit of indirect ecosystem services, although were little able to guess their individual monetary values.

In several cases focus groups raised that our original list of ecosystem services did not cover the importance of water (groundwater, surface). Mezőföld saw the consequences of drainage as ecosystems altered as a result of less water. Discussions ended up in a sad tone concerning the decline of species and habitats (lakes).

The most prominent recreation activity seemed to be bird-watching. Some participants in each focus group dwelled passionately on birds. The general view was that rural residents “co-exist” with nature. The competition from video games (computers) and urban lifestyle in general however was mentioned as a factor behind the less time younger generations spend outdoor. Since Mezőföld had for ages been formed by agriculture, people are accustomed to monocultures. Some found it calming, while others longed for more diverse fields and habitats. Participants had clear preferences regarding the type of landscapes. Preferences were found to be divergent. Nevertheless, in all focus groups the mental benefits of beautiful landscape was underscored. Associations regarding the impact of biodiversity in culture and way of thinking were weak. Mezőföld lacks a robust culture due to forced migration in the past. Therefore these issues appeared to be of little relevance here. Groundwater quality deteriorated due to the presence of nitrates form fertilisers. However these days most people have access to tap water. Participants generally distrusted food purchased in supermarkets and preferred local products for their superior quality (‘they know what the food contains’).

During the focus groups participants (residents) were asked to rank direct ecosystem services previously identified as potentially relevant [12], such as recreation, bird-watching, tourism; landscape; biodiversity in culture; biodiversity in way of thinking, groundwater quality and food quality. An important result of the sessions of focus groups with residents was that all of direct ecosystem services were considered important, however no unambiguous ranking across focus groups emerged.

One of the main conclusions of focus group with hunters was that the dominant agricultural technologies leave little territory for games. Pesticide use and plough up of field strips decimated small games. Besides artificial breeding of winged games habitat creation wais proposed as solution.

During the first two focus groups the issue of littered neighbourhood turned up many times, so, besides art and sporting activities, we also considered it as an issue for indication of social value. In the first session following the discussion on direct ecosystem services a question on comparison was posed to the group. Comparison with art, sport, exercise and ‘cleanliness of settlement’ was found to be a tangible indication of the importance of direct

ecosystem services. The last six focus groups deliberated on their importance. A consensus or at least a majority view emerged in most cases. Direct ecosystem services were considered more important than sporting activities, exercises or art. However cleanliness of settlement, i.e. less litter in the neighbourhood, was valued more. (See Table 2).

TABLE 2: COMPARISON OF THE IMPORTANCE OF DIRECT ECOSYSTEM SERVICES IN SIX FOCUS GROUPS

	Focus groups					
Sport, exercise	+	++	+	++	+	++
Art	+	++	0	++	++	++
Cleanliness of settlement	+	−−	−−	0	−	−

Note: +: Direct ecosystem services are more important, –: Direct ecosystem services are less important, 0: Draw, Double symbols: Consensus, Single symbol: Majority view

V. DMV (CONSENSUS SEEKING)

Participants of the second session were asked to make their CV choices collectively, that is on the basis of what would be best for the environment in the eyes of the whole community.

Participants of DMV may not arrive at a consensus, the process may "need to conclude with voting subject to some form of majority rule". [13]. To elicit the collective decision, which in theory may lead to social price, at the second session majority voting was used, subject no one wanting to veto the choice. We agree with Spash that "seeking to explain, explore and respect (not remove) "dissensus" might be just as valuable in some contexts as aiming for consensus can be in others." [6].

An important conclusion is that it was difficult to achieve consensus. In most focus groups opinions were so divergent that, although views tended to converge during the deliberation in the second session, the veto provision prevented consensus from emerging. A consensus was achieved in only those focus groups, where all participants' initial position was similar. This may indicate that after a discussion session preferences were formed (solidified). The arbitrated social price (consensus decision multiplied by the adult population of Central-Mezőföld of 69 thousand [14]) varied between 257-643 million HUF/year for the 1st program and 386-1287 million HUF/year for the 2nd program. (During the research exchange rate fluctuated around 240 HUF/Euro.) It is important to note though, that the above result needed to be treated only indicative because of the small size of participants.

VI. ANALYSIS OF CV RESULTS

During the test focus group a complete distrust of the usual payment vehicles (i.e. tax, fund) was found, therefore an 'increase in the price of bread' as payment vehicle was invented. The test focus group also made it clear that the term biodiversity is not advisable to use because most participants are unfamiliar with it.

Out of the 242 responses 90 people participated in focus groups. It turned out to be difficult to recruit representative samples for the focus groups. According to Vicsek, due to small sample sizes and not random recruitment procedure, results of focus groups can not be generalised [15]. However one of the main novelties of this research is that on the one hand we dedicated particular attention to have a non-biased recruitment procedure and on the other aimed a relatively large sample size. Across the two samples, based on independent-samples t-test, no significant differences can be found in terms of gender ($p = 0.135$), size of household ($p = 0.593$), number of dependents ($p = 0.179$), education ($p = 0.303$) and income ($p = 0.840$). The only demographic indices where the independence of sample means is significantly rejected is age ($p = 0.000$). The average age of focus group participants is 47.96 as opposed to 40.46 of CV-only respondents. Age turned out to be not a significant factor in the case of whether society should pay for biodiversity improvements ($r = 0.068$, $p = 0.291$), although there is a significant correlation between age and the amount of fair price. Since age negatively correlate with amount of fair price at both programs ($r = -0.161$ and -0.191 respectively) and average age is higher amongst focus group participants, without this bias the difference in fair price bids as a result of deliberative forum participation would even be higher.

Besides demographics, two more possible biases could have occurred. The first one concerns farming. Respondents with income from farmers are overrepresented in focus groups ($t = -2{,}851$, $p = 0.005$). However there is no significant correlation between farming background and responses of whether society should pay for biodiversity improvements ($r = 0.110$, $p = 0.089$). In the case of fair price amount a t-test carried out at both programs rejects the independence of sample means ($p = 0.194$ and 0.256 respectively), in other words implied fair price results are not biased by the differences in farming background.

The second possible bias concerns environmental attitudes. The New Ecological Paradigm Scale (NEP), consisting of 15 likert scale items, is a widely used measure of proenvironmental orientation. It is designed to measure endorsement of an ecological worldview [16]. Average NEP score of CV-only respondents was 53.55 and of focus group participants was 54.77. The means of those who

participated in focus groups and those who did not do not differ significantly (p = 0.219), signalling that no bias were made at the recruitment of participants, i.e. environmental attitudes of the two groups are alike.

One of the most important results of the deliberative methodology is the reduction of protest responses. Respondents may have protested against the payment vehicle or the overall concept of monetary valuation, which itself comprises the previous. Protest bids amounted to 27% of CV-only responses, while to only 13% of focus group participants (see Table 3).

TABLE 3: PROTEST RESPONSES

Scenarios	CV-only (N = 152)	Focus Group (N = 90)
Protest payment vehicle	21	8
Protest bid (incl. payment vehicle)	41 (27%)	12 (13%)

With the favourable outcome of significantly reduced protest responses we believe the DMV methodology we used in this research improves the validity of monetary valuation of biodiversity.

The mean of the implied fair price was calculated at 3954 HUF/year/person of the *Switch from conventional to environment friendly crop production program* and at 6156 HUF/year/person of the *Agro-environmental program*.

Participation in a deliberative forum had a significant impact on the fair price. Focus group respondents placed significantly higher bids in case of both programs (see Table 4).

TABLE 4: INFLUENCE OF DELIBERATIVE FORUMS ON IMPLIED FAIR PRICE

Scenarios	Mean (per year, in HUF)	
	CV-only	Focus Group
Switch from conventional to environment friendly crop production program	3077	5436
Agro-environmental program	4747	8535

A curious result of the analysis is that only age and participation in focus groups correlate significantly with fair price amounts. Contrary to expectations neither gender, income, education, farming background nor pro NEP attitudes correlate significantly with implied fair price. The lack of correlation prevents the estimation of a linear regression model with a good fit.

Average stated yearly net disposable income per head was 679104 HUF. Comparing to this sum implied fair price represent a relatively high value. Analysis of results indicates that socially 0.58% of the average disposable income should be dedicated to modest improvements in biodiversity, captured in the first program, and 0.91% to improve the overall health of the Central-Mezőföld agricultural region, captured in the second program. Participation in deliberative forums significantly increased the implied fair price at both programs (see Table 5).

TABLE 5: IMPLIED FAIR PRICE EXPRESSED IN PER CENT OF AVERAGE NET INCOME

Scenarios	CV-only	Focus Group
Switch from conventional to environment friendly crop production program	0.45%	0.8%
Agro-environmental program	0.7%	1.26%

Although to the best of our knowledge no other research in Hungary aimed at eliciting social price, general contingent valuations in Hungary have so far resulted in similar or a somewhat lower values [17]-[18].

VII. CONCLUSION

Valuation of biodiversity faces many difficulties. In this paper we presented ways to solve some of the problems. Evidence is provided that deliberative techniques improve on the limitations of conventional CV surveys. The DMV methodology applied in this research tackled to some degree the problem prevalent in CV surveys of lack of time and information available for respondents. Thus we were able to reduce protest responses by half and possibly increase validity of results as arriving at a significantly different fair price of biodiversity improvements. For the limitations of CV methods of valuation of such complex and unfamiliar goods as biodiversity we consider the results of focus groups as more valid than CV-only values.

We found that people are capable of ranking the importance of ecosystem services, although results are divergent. Comparisons of the importance of ecosystem services with tangible issues also seem to be working.

Analysis of results indicates a relatively high social value of biodiversity.

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Impact assessment in the EU – The example of REACH

Anna Széchy
Corvinus University of Budapest, 8 Fővám tér, 1093 Budapest, Hungary
E-mail: anna.szechy@uni-corvinus.hu

***Abstract*: This paper examines the European Union's environmental impact assessment practices using the example of REACH, the EU's new chemicals policy. It is shown that, while underpinning the expected positive overall outcome of the regulation, the uncertainty involved in estimating the effects (notably those on human health and the environment) resulted in limited applicability of the impact assessment's findings in the decision making process.**

I. INTRODUCTION

Improving the quality of decision making is receiving increasing attention in the European Union as it strives to increase its international competitiveness as well as to improve its fading popularity among its own citizens. Impact assessments including quantified estimates of the proposed legislation's costs and benefits play an important role in these efforts. The quality and meaningfulness of such assessments has however, generated a lot of criticism in recent years.

In the field of environmental decision making, impact assessments are especially difficult to perform because of the difficulties associated with the quantification of environmental effects. This paper examines the impact assessment process of what is probably the most significant piece of EU environmental legislation in recent years: the new chemicals policy, known as REACH.

Section II takes a look at the impact assessment practices of the European Union in general, including the evolution of the current system and its performance so far, as well as an overview of the problems associated with the treatment of environmental effects in quantitative analyses. Section III examines the impact assessment process of REACH, with a detailed description of the expected costs and benefits and their estimation. Section IV contains the conclusions.

II. IMPACT ASSESSMENT IN THE EU

B. Evolution of the current practice

The practice of regulatory impact assessment in the European Union goes back to 1986, when the so-called Business Impact Assessment procedure was introduced to examine the compliance costs of certain regulations for EU enterprises. The limited scope, lack of scientific soundness and usually ex-post nature of these assessments meant that they were of little use in the decision making process – a situation that the additional tools introduced during the 1990s did little to improve [23].

The efforts to enhance the quality and usefulness of impact assessments gained momentum with the formulation of the Lisbon agenda, "better regulation" being regarded as having a central role in reaching the ultimate goal of increased competitiveness [17]. The better regulation initiative aims to simplify and improve the regulatory environment by ensuring that community action only takes place when this brings clear added value, and that the best policy option is chosen.

In order to achieve this, the Comission's impact assessment practices underwent complete reform and a new system of Integrated Impact Assessments (IIAs) was introduced from 1. January 2003 [8]. The term "integrated" means that these assessments are no longer limited to the business impacts of proposals, but also include the social and environmental dimension, in line with the EU's Sustainable Development Strategy adopted at the Göteborg Council in 2001 [7].

IIAs are ex ante in nature, the goal being to identify and compare all possible policy options, including that of no action. Wherever possible, the analysis should include quantitative and monetised estimates of the likely effects. Stakeholder consultation is also a requirement. The duty to perform impact assessments has been extended to all proposals in the Commission's Legislative Work Programme, with the depth and scope of the analysis depending on the importance of the proposal and the magnitude of its likely effects (principle of proportionality).

The importance of better regulation via impact assessments has been reinforced in connection to the revision of the Lisbon strategy in 2005 [11]. At the same time, the new focus on growth and jobs (a reaction to the EU's disappointing economic performance) tends to put environmental and social goals at a disadvantage next to the competitiveness agenda [20]. This shifting of priorities can be clearly felt in the Commission's statement on the refocused Lisbon strategy: "Meeting Europe's growth and jobs challenge is the key to unlocking the resources needed to meet our wider economic, social and environmental ambitions" [11, p.7]; and in the statement on better regulation, which stresses the need to deepen the economic element of IIAs [12].

C. The environment in impact assessments

Where the environment is concerned, the use of impact assessments and monetised cost-benefit analyses has always been controversial. Monetisation can, on the one hand, help draw

decision makers' attention to effects that would otherwise tend to be overlooked or downplayed. This is the reason why such techniques have been widely embraced by advocates of the environmental cause and a lot of scientific attention is devoted to their improvement.

However, this positive picture is increasingly being challenged by ecological economists, who call attention to a number of theoretical and practical considerations which question the monetary evaluation of environmental goods. The main argument is the high degree of complexity in the natural environment which makes it impossible to isolate and separately value environmental goods [19], [25]. Connected to this is our limited knowledge regarding the functioning of ecosystems, meaning we can never be certain about the effects of human induced changes, which often defy the assumptions of conventional economic analysis, involving irreversible changes and threshold effects [16], [25].

Moral arguments are also very important, such as those about intergenerational and intragenerational equity – valuation techniques attach smaller values to environmental effects if they concern future generations or poor populations [18]. Researchers are often confronted with the problem of respondents unwilling to name monetary figures and accept trade offs in case of environmental goods [16], [19]. Ecological economists raise the concern that evaluation attempts may not actually be a process of measuring existing preferences; rather, they are responsible for creating them [19]. (That is, people may not originally be inclined to consider the environment in monetary terms, but evaluation exercises may teach them to accept this way of thinking.)

D. Lessons from implementation

Next to the underlying theoretical doubts, the practice of performing impact assessments in the EU is also under constant scrutiny. Several studies have been published aiming to evaluate the experiences since the introduction of the Integrated Impact Assessment system. These found a series of shortcomings indicating that IIAs are still far from providing a universal tool for achieving effective and efficient regulation.

Examining the 70 Extended Impact Assessments undertaken by the Commission between 2003 and 2005, Renda found that most of them do not actually contain monetised estimates of the proposal's costs and benefits (some of the costs were monetised in 40% and all costs in 27,1% of the cases – for benefits, the rates are even lower, some of them being monetised in 28,6% and all of them in only 14,3% of the assessments). Further problems include a lack of comparison of possible regulatory alternatives, methodological concerns, as well as poor presentation of the assessments' findings [23].

The evaluation report prepared for the Commission by independent consultants in 2007 emphasises the variability of the impact assessments' quality, with assessments of legislative proposals or action plans generally being more satisfactory than those of other non-legislative proposals or spending programmes. Among the problems identified were a lack of the necessary expertise, time and resources to carry out high quality assessments, as well as a tendency to see IIAs as merely a bureaucratic exercise to justify a policy choice that has already been made. Both factors lead to a limited trust and therefore limited reliance on the assessments' findings in the decision making process [14].

In relation to environmental impacts, analysts note that these generally receive less attention in the impact assessments than economic effects, and suggest that this bias naturally results from favouring quantitative and monetised estimates and is therefore inherent in the IA system [14]-[15]. (In the United States, where cost-benefit analysis is extensively used in policy making, it is also intensively criticised by some researchers as a non-neutral, anti-regulatory instrument [1], [5].)

III. ASSESSING THE IMPACTS OF REACH

The EU's new chemicals policy, known as REACH, is widely regarded as one of the most complex pieces of legislation ever adopted by the Community. It is expected to have substantial effects for industry, as well as human health and the environment, providing an ideal example to examine the EU's impact assessment practices for environmental legislation.

A. Background

REACH was born from the realisation that the amount of information available on the health and environment effects of chemical substances on the EU market was far too limited to ensure their safe use. Earlier regulations required all chemicals placed on the market from 1981 to undergo thorough testing, but previously existing chemicals were not subjected to this requirement. This created an incentive for the chemical industry to avoid testing costs by continuing to use existing substances, resulting in a situation where as few as 3800 new substances shared the market with around 100000 older (and thus untested) ones [13].

The new regime, comprising the Registration, Evaluation and Authorisation of Chemicals (hence the acronym, REACh) extends the testing requirements to existing substances as well (depending on their volume range). The responsibility now lies with the producers and importers of chemicals to prove that their substances do not have adverse effects, and to pass on all information necessary for safe use along the supply

chain. The most hazardous substances will possibly be banned from further use.

By enhancing chemical safety, REACH is expected to provide substantial benefits, reducing chemicals related illnesses and environmental damage, as well as restoring consumer confidence in the industry and promoting innovation by putting an end to the differential treatment of new substances. On the other hand, the testing costs, as well as the costs of the substitution of hazardous chemicals place a significant burden on industry.

The chemicals sector is one of the EU's most successful industries, recording a substantial trade surplus and providing about 1,3% of Community GDP as well as about 1,2 million workplaces [10]. However, this global leadership position is under increasing pressure from US and Asian competitors. Also, because of the widespread use of chemicals throughout the entire manufacturing sector, any impacts on the chemical industry may have far reaching effects across the entire spectrum of European industry [10].

B. Assessing the impacts of REACH

Because of the magnitude of its expected effects, the REACH regulation became subject to one of the most profound impact assessments undertaken after the introduction of the IIA system. Although the preparations for a reform of the EU's chemicals policy already began in 1998, it wasn't until 2003 that the Commission issued a formal regulatory proposal [9], accompanied by an Extended Impact Assessment [10] according to the new regime. In preparation for the proposal, an extensive public consultation procedure was also conducted, including an Internet survey with around 6000 responses from various stakeholders such as industry, NGOs, member states and individuals.

The inter-institutional decision making process took another three years to complete, finally resulting in the adoption of REACH in late 2006 (it entered into force in June 2007) [24]. During this time, further work on impact assessment was undertaken by various research institutes, upon request of the Commission as well as other stakeholders, notably from the chemical industry. In reaction to the concerns regarding the competitiveness of the European chemical companies, most of the changes that REACH underwent before its adoption brought a reduction of its requirements.

C. Costs

The costs of REACH can be grouped into direct and and indirect costs, the former referring to the expenses of chemical companies in order to ensure compliance with the regulation, and the latter meaning all other economic losses resulting from REACH across the entire EU economy.

The direct element consists mainly of the costs of performing the required tests for the registration of substances, and also includes administrative costs and fees to be paid to the European Chemicals Agency (a new institution with the responsibility of managing REACH processes). These are relatively easy to estimate, since the costs of carrying out certain substance tests are known (there is some uncertainty as to how much REACH-compatible information is already in the possession of chemical companies).

The Commission's Impact Assessment puts the direct costs of REACH at a total of 2.3 billion Euros, spread over the 11 year period of the registration process. This (like other figures in the IA) is an estimate only for the EU15 – for the 10 countries who joined the EU in 2004, the Commission expects effects proportionate to the size of their chemicals sector (which is much smaller, only about 4% of industry in the EU15) [10]. However, as the financial position of chemical companies is generally much weaker in the New Member States, they may find it more difficult to cope.

While it may seem high at first glance, it should be noted that the amount indicated for the direct costs of REACH is equals only about 0.05% of the chemical industry's annual turnover [10]. But as representatives of the chemical industry point out, the distribution of these costs within the sector will be uneven, with a large part of the burden falling on the producers of specialty chemicals – mainly SMEs, characterised by the high number and low volume of their substances. Cefic estimates that 20% of chemical companies will be bearing 80% of the registration costs [3].

The original ideas for REACH as set out in a White Paper published by the Commission in 2001 envisioned far more extensive testing requirements [6], but as a result of the following public consultation procedure, many tests were dropped, especially in the lower volume ranges, resulting in an 80% decrease of the expected registration costs [10]. Further impact assessment (carried out by KPMG under a memorandum of understanding between the Commission and industry in 2004) indicated that lower volume chemicals and SMEs were still relatively vulnerable [2]. This was probably the main influence that led Parliament and Council to adopt a final text which further reduced the testing requirements for substances under 100 tons/year.

Two factors that may strongly influence the direct costs (and also the need for animal testing) are the extent of application of (Q)SARs and the OSOR principle. The former refers to (Quantitative) Structure-Activity Relationships – methods that allow determining the properties of a substance based on its molecular structure and similarities to other substances. These are currently being

developed and validated, and the testing costs of REACH greatly depend on how soon and how widely they can be used. OSOR (One Substance One Registration) refers to the sharing of information between the registrants of identical substances to avoid unnecessary testing – in principle, this is mandatory, but exceptions can be granted to protect sensitive business information, and this could, in practice, provide a loophole for large companies who would rather leave financially weaker competitors to struggle on their own. The Commission's 2.3 bn Euro estimate for the direct costs of REACH assumes the availability of (Q)SARs before the registration of lower volume substances begins, as well as a high level of information sharing [10]. Other studies have generally arrived at slightly higher cost figures, up to 4 billion Euros [26].

The indirect costs of REACH mainly affect the downstream users of chemicals and largely depend on how many chemicals will be withdrawn from the market and how difficult their substitution will be. Withdrawal can occur either because a hazardous substance is not granted authorisation or – more often – because the producer of a substance decides not to incur the costs of registration. This effect is naturally much more difficult to predict, leading to a much higher variance in the estimates for the expected indirect costs.

The Commission, using a micro-economic model to forecast company behaviour under changing market circumstances (eg. increased costs because of REACH), comes to the conclusion that only 1-2% of substances will be withdrawn, resulting in indirect costs in the range of 2.8-3.6 billion Euros, and no significant macroeconomic effects such as loss of jobs or GDP [10]. By contrast, many industry studies, largely using case study approaches (based on surveys among chemical companies) spoke of devastating results, with substance withdrawals up to 30%, resulting in hundreds of billions of Euros and millions of jobs lost throughout the EU [26].

The Commission points out that the costs to downstream users are unlikely to exceed the magnitude of the direct costs, since the downstream users can prevent the withdrawal of substances that are critical to them by helping to cover the costs of registration [10]. Therefore, industry studies assuming the loss of large numbers of substances are considered unrealistic. Many have also criticised the case study approach as this often leads to strategic answers from company representatives [26]. Green NGOs remind of previous experience with environmental legislation, where the actual costs generally proved to be substantially lower than industry forecasts [4].

D. Benefits

REACH is expected to deliver many benefits, mainly in the field of human health and the environment. It will reduce the damages caused by harmful chemicals through improved risk management and the substitution of hazardous substances with safer ones. While all studies agree that the benefits of REACH will be substantial, they could not be estimated similarly to the costs. Attempts to quantify the benefits only went so far as to provide some examples which could give an impression of their likely scale. However, even these partial estimates require difficult assumptions.

The main problem for the benefit calculations lies in the fact that very little is known about the initial situation that REACH is expected to improve. It is the main goal of REACH itself to alleviate the lack of information about the harmful properties of chemical substances – without this information it is not possible to tell what damage is caused by them today. Thus, there is no baseline to which the expected results of REACH could be compared [10], [22].

In its Impact Assessment, the Commission gives an estimate for the health benefits of REACH, stressing that it is only an example and should not be interpreted as an official figure for the expected benefits of REACH. Assuming that chemicals-related illnesses (mainly cancer, but also skin and respiratory diseases) are about 1% of the total disease burden in the EU, and that REACH will reduce these by 10%, they arrive at a saving of 50 billion Euros over 30 years (employing a statistical value of 1 million Euro per human life and a 3% discount rate) [10]. (To compensate the uncertainties regarding the elements of the calculation, prudent estimates were used throughout.)

As for the environmental effects of the new policy, our knowledge is even more limited. However, it has been shown that many animal populations suffer from exposure to chemicals (eg. thinning of egg shells, etc.) [10]. Furthermore, it is also clear that much of the damage to human health also occurs via the environment. The Commission itself mentions the benefits that will probably result form reducing the environmental presence of harmful chemicals, but does not attempt to quantify them [10]. DG Environment has, however, commissioned a study that aims to give an impression about the possible magnitude of these benefits by concentrating on a few of the more tangible environmental effects and using several methods to monetise them [21].

The approach considered most reliable calculated the current costs of mitigating chemical pollution (eg. drinking water purification, treatment of contaminated sewage sludge, etc.) and assumed that REACH would reduce these by 10% - resulting in saving of a 2.8-9 billion Euros over 25 years. The willingness to pay method resulted in substantially higher figures, while the least robust approach (based on past damages from substances whose harmful effects are now well known) provided

estimates up to 52 billion Euros. It should be noted that all of the above estimates relate only to the chosen examples, not the entirety of possible environmental benefits [21].

Alongside the improvements to human health and the environment, REACH is thought to be associated with a wide range of business benefits, which are, however intangible in nature, and did not receive as much attention in the impact assessments as the other effects. Such benefits may include increased consumer confidence in the chemical industry, improved communication in the supply chain, a reduction of future liability payments, and increased innovation [10], [22], [26].

The issue of innovation was rather controversial in the discussion of impacts, with industry representatives fearing a negative effect because of REACH compliance diverting the financial and human resources from R&D. While some concerns regarding human capacities could be justified, the Commission considers that, with testing costs only amounting to 3% of the industry's annual R&D budget, REACH should rather have a positive effect on innovation, especially on the longer term [10], [26]. This is due to the level playing field it creates between existing and new substances, with the requirements for new substances even made easier (registration is only required above 1t/year, opposed to the previous 10kg).

All of the above conclusions were drawn based on the 2003 Commission proposal for the REACH regulation. In the final version, the registration requirements of REACH have been further reduced, as previously mentioned. Many have voiced fears (notably environmental NGOs) that because of these changes, REACH will no longer be able to deliver the described benefits. However, no specific attempt was made to adjust the benefit calculations to show the effects of the modifications.

IV. Conclusion

The impact assessment of the REACH proposal showed that, although the regulation entails substantial costs, the expected benefits clearly outweigh these and provide for a positive net effect. The difference between the two sides appears to be at least one order of magnitude, large enough for this conclusion to remain valid despite the uncertainties involved in the calculations.

Overall, it can be seen that the picture regarding the benefits of REACH is considerably vaguer than that of the costs. Some uncertainty was present regarding the indirect impacts of REACH on downstream users and the wider EU economy. Here, the Commission's IA – although it could not completely dispel the fears voiced in some industry studies – was successful in supporting REACH as a proposal that would not entail disastrous economic consequences. Far more uncertainty remained regarding the expected benefits.

As a highly significant piece of legislation, REACH has been subject to one of the most thorough impact assessments since the introduction of the IIA system. The REACH IA is free from many of the shortcomings found in other assessments that resulted in the generally poor evaluations of the Commission's IA practices. Following the official impact assessment, the Commission also commissioned a number of other studies aimed at clarifying the picture in areas where the original IA offered limited insights. Even so, the REACH IA process completely falls in line with the observation from an American study that "the typical outcome of a CBA includes a dollar value for expected costs and a wide range of dollar values for a few quantifiable benefits" [5, p. 7.].

Furthermore, even these few quantified benefits relied on very general assumptions (such as the 10% reduction in chemicals related damages), with no clear idea about the link between the specific requirements of REACH and the expected benefits. This meant that it was not possible to tell how a change in the requirements would affect the positive outcome. On the other hand, the calculation of the (direct) costs was far more accurate, and could be broken down to the level of the prescribed tests – so arguments for dropping any of these could be backed with concrete figures for the saved costs. This could well be the main reason why proponents of a weaker REACH generally gained the upper hand in the negotiations.

Based on this experience, one could be inclined to say that the best way to promote environmental interests in decision making is to improve the quantification of environmental effects and the benefits of environmental regulations in general. However, it is necessary to ask the question to what extent this goal is attainable?

Practice shows that the (monetised) assessment of environmental (as well as social) effects is always less developed than that of business impacts. And there are clear indications from theory showing that this problem is inherent in the nature of environmental goods, and so can never be fully compensated by improvements in methodology and data collection. Therefore it seems unlikely that the improvement of impact assessment practices, which is now in the main focus of the EU's efforts on better regulation, can indeed provide a panacea for efficient and effective regulation (at least in the field of the environment).

The example of REACH is a valuable lesson regarding the results that can be expected of use of impact assessments in the policy process. It shows that IAs can be very useful in a number of ways, such as anticipating the economic burden of a new regulation, helping to clarify a picture which is often

distorted by widely diverging claims from various lobbyists; as well as providing some understanding of the benefits, helping to supply arguments in favour of costly environmental policies.

However, the REACH experience also points to the limitations of impact assessments as a tool for choosing the precise course of regulatory action. It supports the suspicion that using IAs and cost-benefit analyses to this end does, indeed, favour economic considerations over – always more vaguely presented – environmental interests.

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Willingness to pay for the protection and development of Baradla-Domica cave system

Zsolt Krajnyik
Corvinus University of Budapest, Department of Environmental Economics and Technology,
Fővám tér 8., 1093, HUNGARY
E-mail: krajnyikzs@hotmail.com

***Abstract*: The objective of this paper is to show the possibilities of the monetary valuation of natural resources in Slovakia. In our study we use Choice Experiment method - which is a very important tool for valuing non-market or environmental goods - to estimate the people's willingness to pay for the protection and development of Baradla-Domica cave system. We introduce the results of the face-to-face survey carried out in Slovakia, and sum up the conclusions of the study.**

I. INTRODUCTION

The methods of valuation of environmental or non-market goods have become crucial when determining the costs and benefits of public projects. The valuation studies have been applied in many different areas, such as: health-, transport- or environmental economics. There exists a range of valuation methods to estimate non-market costs and benefits [2], [9], [15].

In our case we applied one of the stated preference methods, the so-called Choice Experiment (CE) method, in order to estimate the value of the benefits related to the protection and development of Baradla-Domica cave system by carrying out a citizens' survey in Slovakia[8]. The change in the quality of the cave system should be expressed in monetary terms in case if we want to compare different programs by using cost and benefit analysis. In addition the protection and development of natural formations must be an obligation for every country.

The reminder of this paper is organized as follows. Part II. sets out the basic methodology and the choice experiment approach. Part III. is a brief description of the evaluated good. In part IV. we discuss the steps in the design of the study. Part V. presents the survey, while part VI. introduces the results. Conclusions of the study are summed up in part VII.

II. METHODOLOGY

The use of stated preference methods has come into prominence for the last two decades among the methods for monetary valuation of environmental goods. There are more explanations for this. On the one hand, they can capture not only the use values but also the non-use values of _ certain goods and on the other hand, creating hypothetic markets makes them possible to determine different preferences. [4], [15], [17].

Stated preference techniques include a range of methods which take a similar approach to valuing natural resources or other environmental goods. Each method measures different preferences of the individuals regarding environmental goods. That can be revealed by classifying, ranking, choosing or comparing alternatives determined in advance [4], [6], [7], [14].

A common feature of these methods is that they create a non-existing market with the help of questionnaires and try to directly or indirectly understand through those how individuals value environmental goods or a change in them, in money term.

Choice Experiment is one example of stated preference methods to environmental valuation, since it involves eliciting responses from individuals in constructed, hypothetical markets, rather than the study of actual behavior [8], [14].

We have chosen the Choice Experiment method to estimate the value of protection and development of Baradla-Domica cave system for several reasons. They are the following:

- it is becoming ever more frequently applied in monetary valuation of environmental goods [3],
- it has the most comprehensive and professional literature among the stated preference methods,
- its scientific role and acceptance increase as well [3], [4],
- it is able to capture and estimate the non-use values, which are also significant in the case of cave systems, and
- has never been applied in Slovakia before.

The Choice Experiment method was initially developed by Louviere and Henscher [11] and Louviere and Woodworth [12]. The method is based around the theory that any natural resource or non-market good can be described in terms of its attributes and the levels that these take. Using CE the individuals are given a hypothetical setting and asked to choose their preferred alternative among

[8] The same survey has been carried out in Hungary as well, but due to size limitations of this paper we will introduce only the results of the Slovakian survey.

several alternatives in a choice set. A monetary value is included as one of the attributes, along with other attributes of importance. When individuals make their choice, at the same time they make trade-offs between the levels of the attributes in the different alternatives presented in a choice set. Thus, it is possible to estimate respondents' willingness to pay[2], [7], [15].

According to the framework of the random utility theory the indirect utility function for each respondent *i* (U_i) can be decomposed into two parts: a deterministic element (*V*), which is typically specified as a linear index of attributes (*X*) of the *j* different alternatives in the choice set, and a stochastic element (*e*), which represents unobservable influences on individual choice [8], [16]:

$$U_{ij} = V_{ij}(X_{ij}) + e_{ij} = bX_{ij} + e_{ij} \quad (1)$$

Initially the CE method was applied in transport economy and in market research where the trade-off between the certain transports projects and the individual goods was examined. Further on it spread in health economy [4], [7].

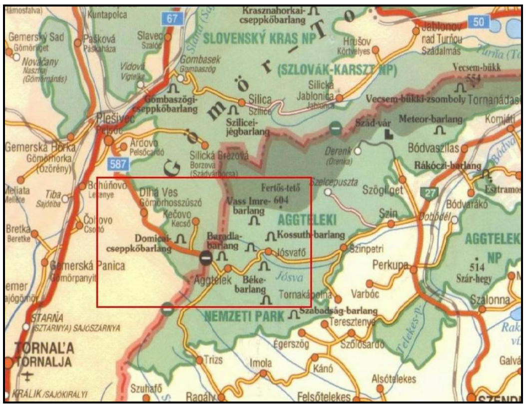
The CE method was first applied to evaluate environmental goods by Adamowicz et al. in 1994 to value the benefits of the water recreation [2], [14], [15]. Later it became _ wide-spread and it has been applied for valuation of different environmental goods in order to underpin that it can be applied successfully in many areas of environmental economics [7][9].

It is worth mentioning that according to our best knowledge the Choice Experiment method has never been applied for the valuation of cave systems.

III. THE EVALUATED GOOD

The Baradla-Domica cave system[10] is one of the longest and the most significant stalactite cave system not only in Hungary and Slovakia, but also in Europe. The total length of the cave system is about 25 km, three quarters of it is situated in Hungary and known under the name Baradla, and one quarter of it is situated in Slovakia, known as Domica. The Baradla is on the territory of National Park of Aggtelek, and the Domica cave is on the territory of National Park of Slovak Karst [5], [19], [20]. Figure 1. shows the geographical location of the caves.

FIGURE 1: THE GEOGRAPHICAL LOCATION OF THE CAVES



The cave system has been listed on the World Cultural and Natural Heritage site since 199511 and on the Ramsar site since 200112. While the Baradla cave is the most visited cave in Hungary, the Domica cave is primarily known only in the eastern part of Slovakia. For the visitors the greatest experience in these caves is the extraordinary colorfulness of dripstone formations (see Figure. 2.), but its flora and fauna is also very significant [5], [19], [20].

In the passages of the Domica nearly 160, while in the Baradla 450 animal species have been identified, most of which are diminutive and hardly identifiable creatures. There are lots of species which are remarkable because they are only known from the Baradla and Domica. These are for example mosses, ferns, crabs and unique bats [5], [10], [20], [21].

In addition to the touring possibilities the so-called "Concert Hall" is suitable for organizing different cultural programs, as music concerts, presentations or wedding ceremonies [1].

We think the protection of all natural formations of World Cultural and Natural Heritage sites, in our case the Baradla-Domica cave system must be an obligation for every country.

FIGURE 2: THE "ROME BATHS" FORMATION IN THE DOMICA CAVE

[9] For the review of selected studies see: Hanley, N., S. Mourato and R. Wright, 2001.

[10] Cave systems are considered unique formations of nature, any harm caused to them cannot usually be restored. In this sense the cave systems opened to the public are damaged formations to a certain extent.

[11] Until 1995 only two caves, the Mammoth Cave, Kentucky, USA, and the Skocjan Cave, Slovenia, have been declared World Heritage Sites [19].

[12] The area represents a unique natural value, the first internationally recognised transboundary subterranean wetland of Hungary and Slovakia.

IV. STUDY DESIGN

One main focus of this study was to estimate the people's willingness to pay for the protection and development of Baradla-Domica cave system. After we determined the topic of the research, the initial steps in this study were to identify the relevant choice attributes and their levels.

Identifying the set of attributes and the levels these take is a key phase in Choice Experiment design, because they have to meet a number of requirements. These are that they are:

- relevant to the problem being analyzed,
- realistic,
- capable of being understood by the sample population, and
- of applicability to policy analysis [4], [8].

In order to choose the relevant attributes and meet the above mentioned requirements we conducted a number of interviews with experts and a pilot survey with the local residents.

All this information provided help to determine the most valid attributes and its levels. Four attributes were established in order to estimate the value of the benefits related to the protection and development of the cave system. These are following:

Protection of flora and fauna.

This attribute refers to the protection of the species of the flora and fauna living in the cave. The hypothesis is that higher protection is preferred to lower protection of these species. The attribute has two levels: (low and high).

Protection of dripstone formations.

This refers to the protection of the unique natural dripstone formations in the cave in order to keep up their existence for the future generations for a long term period. Our hypothesis is that higher protection is preferred to lower protection of dripstone formations. There are two levels: (low and high).

Improvement of cultural and touring services.

This attribute refers to the improvement of cultural and touring services by providing more or less touring possibilities and organizing cultural programs (concerts, presentations, wedding ceremonies etc.) in the cave. This attribute also has two levels: (low and high).

Raised entry fee. This attribute is the so called ”price attribute” and is used to estimate indirectly the people's willingness to pay for the different types of protection/development programs (choice sets). The attribute has four levels: 200 SKK, 240 SKK, 300 SKK and 400 SKK[13].

The first three attributes are the main indicators of the condition of the caves which ordinary people see as important, but which are also consistent with the cave regulator’s expectations. Regarding the price attribute, during the pilot survey the general public accepted the idea that protection/improvement had to be paid for, and raised entry fees were viewed as a realistic payment mechanism.

Once the attributes and its levels were determined, SPSS econometric software was used to create choice profiles, which were then combined to make up the choice sets used in Choice Experiment. An example choice card (set) is given in Table 1. Due to the simple nature of the design, blocking was not necessary. The combination of attributes and their respective levels was created using an orthogonal design procedure. After this procedure, the questionnaire was constructed.

TABLE 1: AN EXAMPLE CHOICE CARD

Attributes	***Option A***	***Option B***	***Neither***
Protection of flora and fauna	low	low	I would not want either **A** or **B** (status quo)
Protection of dripstone formations	low	high	
Improvement of touring and cultural services	high	high	
Raised entry fee	200 SKK	300 SKK	remains 160 SKK
Your choice	**A** choice □	**B** choice □	Neither □

V. THE SURVEY

We carried out a face-to-face survey mainly among the local residents and several tourists as well. The reason for this was that the visitors are coming mainly from the region of Kosice within a range of about 50-80 km from the cave[14], and this group could have the most benefit from the protection/development of the cave. During the survey we tried to keep two aspects of the representatives. These were the gender and the educational qualification[15]. In the survey the simple random sample strategy was used, which is generally a reasonable choice.

First, we presented the hypothetical scenarios related to the condition of the cave system and explained what would happen to the caves in the cases of implementation and of non-realization of the protection/development program. The future effects which people were asked to value were: the protection of dripstone formations; the protection of flora and fauna; and the improvement of touring and cultural services. We also explained that any level of protection/development would cost them extra money (raised entry fee).

[13] The actual entry fee during the survey to the Domica cave was 160 SKK.
1 EUR = 30.126 SKK (recently)

[14] Personnal communication of Lőrincz Ottó, the director and the touring guide of Domica cave.

[15] We performed χ^2-test in order to check the representativity. Unfortunately the sample is representative only in the distribution of the adult population by gender. Other variables are not representative.

Four choice sets were then presented to each respondent and the survey participants were requested to choose their most preferred option. Each choice set consisted three-way choice (see Table 1.):

Option A and option B, which gave a protection or/and improvement in at least one attribute for a raised entry fee. A third option of choosing "neither" was also given. This "neither" option, commonly called "status quo", stated there would not be increase in entry fee, but no certain protection or/and improvement would be realized in the future.

One hundred and seventy-six interviews were accomplished altogether in the winter of 2008.

VI. RESULTS

Responses from Choice Experiments are analyzed using logit or probit models. Due to the simple nature of the study, we used a simple Multinomial logit model (MNL) for the estimation, according to random utility theory. This model can be estimated by conventional maximum likelihood procedures using econometric software such as STATA or LIMDEP [8], [13].

In our case a STATA version 10. econometric software was used to estimate the MNL model[16]. Attributes were coded using dummy variables. Estimating according to equation (1) the results for 176 respondents from the MNL model are shown in Table. 2.

TABLE 2: MULTINOMIAL LOGIT MODEL RESULTS

Choice	*Coef.*	*P>|z|*	*[95% Conf. Interval]*
Fee	-.0048155	0.000	-.0065378 -.0030932
Flora	1.248205	0.000	1.02379 1.47262
Stone	1.817986	0.000	1.578362.057612
Serv	.1503397	0.224	-.0920457 .3927252

Number of obs = 2112 LR $chi^2(4)$ = 385.33
Prob > chi^2 = 0.0000 Log likelihood = -1151.652
Pseudo R^2 = 0.1433
Fee – raised entry fee
Flora – protection of flora and fauna
Stone – protection of dripstone formations
Serv – improvement of touring and cultural services

The signs of all attributes are positive (except the "fee" attribute), as consumer preference theory predicts, as these attributes are coded to show an increase in the protection/development of the cave which should lead to increase utility. The "fee" (as price attribute) is negative and therefore also in accord with standard economic theory.

As may be seen, two attributes, namely the protection of dripstone formations (Stone) and the protection of flora and fauna (Flora) are the main determinants of choices for, and their coefficients have a high positive value and are statistically significant. It means, people can be seen to prefer the "high" level of these attributes. The attribute of improvement of touring and cultural services (Serv) has also a positive sign, but its value is much lower compared to previously mentioned attributes, and is statistically not significant.

The value of a marginal change in any of the attributes can be obtained by dividing the estimated coefficient on that attribute by the coefficient on price [4], [8], according to equation (2) where β_{ATT} is the coefficient on any of the attributes and β_{FEE} is the coefficient of the cost attribute:

$$WTP_{ATT} = (-1)\frac{\beta_{ATT}}{\beta_{FEE}} \qquad (2)$$

For example, for a change in the protection of dripstone formations of Baradla-Domica cave system the willingness to pay is equal to (1.817/-0.0048).

The WTP were calculated for each of the attributes by applying equation (2) and the results are given in Table 3.

TABLE 3: WTP RESULTS

(N = 176)	*WTP (SKK)*
Protection of flora and fauna	259
Protection of dripstone formations	378
Improvement of touring and cultural services	31
Total	668
The actual entry fee (2008.january)	160
WTP total	**508**

1 EUR=30.126 SKK

The result shows that the total willingness to pay for the protection and development of Baradla-Domica cave system is 508 SKK per person for one entry, which is 0,386 % of their average annual income[17]. As we predicted, the most important for the people is the protection of dripstone formations and the protection of flora and fauna. Their WTP values are much higher than the WTP for the improvement of touring and cultural services.

After we determined the WTP per person, we also made the aggregation of the results of the willingness to pay[18]. We assume that the participants of the survey represent those who are concerned in the aggregation (population of Slovakia).

Although, we carried out the survey only in the region of Kosice, we considered the complete population of Slovakia as concerned, because the Baradla-Domica cave system is a unique natural formation in the world and the Domica cave is of national importance as well, therefore its protection is important for the whole population.

[16] We wish to thank to the Department of Environmental Economics and Technology, Budapest University of Corvinus for using the STATA software and also thank Marjainé Szerényi Zsuzsanna, Ph.D. for her helpful assistance.

[17] In order to test the confidence of the results we performed the estimation by using a Conditional logit model as well. The total WTP result was close to MNL result, 477 SKK/person/entry.

[18] We found interesting to perform the aggregation, despite not having achieved the representativeness of our sample, which is ought to be important at the aggregation.

According to the analysis of the willingness to pay we found out that those people who have already visited the cave (users) are willing to pay a slightly higher entry fee for the protection and development program than those who have no intention to visit the cave in the near future and whose intention is not sure (non-users). In other words, the non-users of the cave offered on average 94 % of the willingness to pay of the users. It means in the aggregation for other regions we used 477 SKK (non-users), while for the region of Kosice 508 SKK, since the majority of the visitors come from this region (users).

Taking into account these factors, we received the aggregated results given in Table 4.

TABLE 4: AGGREGATED WTP RESULTS[19]

The area of the aggregation	*Population aged 18 years and more*	*Aggregated WTP (Million SKK)*
Region of Kosice	596 200	302,9
Other regions	3 614 868	1 724,3
Slovakia	**4 211 068**	**2 027,2**

It can be seen that the protection and development of Baradla-Domica cave system is notably high, 2.03 milliard SKK even on the basis of the most cautious estimation.

VII. CONCLUSION

The main purpose of this study was to measure the people's willingness to pay for the different types of protection/development programs of the Baradla-Domica cave system. In order to investigate this, we used the Choice Experiment method, as one of the stated preference techniques for valuing environmental goods.

The future effects on the condition of the cave system which people were asked to value were: the protection of dripstone formations; the protection of flora and fauna; and the improvement of touring and cultural services.

A broad conclusion is that the Choice Experiment approach succeeded in this case, and - with some limitations - can be applied for the valuation of caves.

The result shows that the majority of the population is ready to express their willingness to pay and support the protection and development of the cave system in the future. Using the MNL model results, implicit prices were obtained, showing the marginal utility of the changes in used attributes.

The total willingness to pay for the protection and development of Baradla-Domica cave system is 508 SKK per person for one entry, which is 0,386 % of their average annual income.

On the basis of the aggregation for the total population of Slovakia we can conclude that the result is notably high, 2.03 milliard SKK even on the basis of the most cautious estimation. This refers to the fact that the Slovakian population attributes a considerable value to the protection of such a unique natural formation as the examined cave system is.

On the other hand we should not expect such representations to be exact, due to the simple nature of the study and use of small sample size.

All in all, we can conclude that the Choice Experiment can be applied well in Slovakia and the population accepted the method and the idea of the monetary valuation. As it was the first population survey using the Choice Experiment method in Slovakia, in our opinion we need much more research in the future in order to increase the role of the monetary and Choice Experiment valuation methods in terms of affecting the decisions of the environmental policy.

[19] We used one of the simplest methods of the aggregation when we multiply the willingness to pay results by the number of the relevant population.

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THE USE OF ENVIRONMENTAL MANAGEMENT ACCOUNTING FOR INVESTMENT IN AND CONTROL OF 'CLEAN DEVELOPMENT MECHANISM' PROJECTS

Christian Herzig[1], Roger L. Burritt[2], Sven Bode[3]

[1] Research Associate at the Centre for Sustainability Management, Leuphana University of Luneburg, Germany; and Visiting Research Fellow at the Centre for Accounting, Governance and Sustainability, School of Commerce, University of South Australia, Adelaide, Australia
E-mail: herzig@uni.leuphana.de

[2] Professor in Accounting, Director, Centre for Accounting, Governance and Sustainability, School of Commerce, University of South Australia, Adelaide, Australia
E-mail: Roger.Burritt@unisa.edu.au

[3] Senior Associate at the Arrhenius Institute for Energy and Climate Policy, Hamburg, Germany
E-mail: sven.bode@arrhenius.de

***Abstract*: The design of a Clean Development Mechanism project is a complex process involving the survey, analysis, supply and control of site-specific physical and monetary environmental information to meet registration, monitoring, and reporting requirements. Such information can be provided by Environmental Management Accounting, yet to date such accounting has not been referred to in the discussion of Clean Development Mechanism projects.**

This conceptual paper is based on an ongoing project that, first, aims to achieve a fuller understanding of the links between the Clean Development Mechanism project activity cycle and various Environmental Management Accounting tools and, second, tries to examine the usefulness of Environmental Management Accounting for Clean Development Mechanism project planning, implementation, and eco-control.

Preliminary results of the analysis show that Environmental Management Accounting: assists companies to obtain the necessary and higher quality information for use in the Clean Development Mechanism investment, monitoring and control process; helps companies in developing countries to measure, analyse, monitor, control and demonstrate the environmental (and social) impacts of projects; shows where improvements to the financial bottom line occur through engagement with Clean Development Mechanism projects and associated carbon credits traded in the market; through operational budgeting for Clean Development Mechanism projects promotes the effectiveness of corporate responses to the challenge of emissions reductions; and, finally, contributes towards movement towards a low carbon equivalent economy.

I. INTRODUCTION

In the context of the reduction of greenhouse gas emissions by business a number of new tools have been introduced which highlight benefits from the links between climate change and corporate opportunities [1]- [3]. One of the tools is the Clean Development Mechanism which holds considerable promise to help reduce global warming while bringing income to project developers in Clean Development Mechanism host countries. The Clean Development Mechanism adopted under the Kyoto Protocol in 1997 and entering into force in 2005 provides one tool to integrate industrialised and developing countries to help reach greenhouse gas targets of industrialised countries and sustainable development of developing countries [4].

The design of a Clean Development Mechanism project is a complex process involving the survey, analysis, and supply of site-specific physical and monetary environmental information to meet registration, monitoring, control and reporting requirements [5]. Such information can be provided by Environmental Management Accounting [6], yet to date such accounting has not been referred to in the discussion of Clean Development Mechanism projects. The main aims of this conceptual paper are, first, to achieve a fuller understanding of the links between the Clean Development Mechanism project activity cycle and various Environmental Management Accounting tools and, second, to examine the usefulness of Environmental Management Accounting for Clean Development Mechanism project planning, implementation, and eco-control.

The reminder of the paper is structured in the following way. First, the Clean Development Mechanism scheme and the project activity cycle are outlined. Second, a framework for Environmental Management Accounting is introduced. Next is a discussion of linkages between Environmental Management Accounting and the Clean Development Mechanism whereby tools are

presented providing necessary and higher quality information for investment in and control of Clean Development Mechanism project activities. The paper ends with a concluding summary.

II. CLEAN DEVELOPMENT MECHANISM

The Clean Development Mechanism was adopted under the Kyoto Protocol in 1997 and entered into force in 2005. It allows industrialised countries called "Annex B countries" to comply with a proportion of their quantified greenhouse gas emissions reduction commitments by investing in emissions reduction projects in developing countries, termed "Non-Annex B countries" [7]. Such investments by companies in Annex B countries tend to be cheaper because of low levels of investment in basic emissions reduction in developing countries in the past. However these investments rely on the incentive provided by giving emission reductions credits, or carbon credits, to companies in Annex B countries to offset against their carbon dioxide emissions. Developing countries, which do not have emission reduction targets, also benefit from emission reduction project investments under the Clean Development Mechanism scheme: these projects provide a source of financial support through generating certified emission reductions designed to contribute to sustainable development of the country. Such potential for emission reductions makes the Clean Development Mechanism a topic of current major importance in many developing and emerging regions including Latin America and the Caribbean, Asia and the Pacific and Africa.

Apart from some basic rules, the Clean Development Mechanism has been designed as a bottom-up mechanism. In other words project developers are more or less free to choose the design of a Clean Development Mechanism project and to propose individual baselines and monitoring plans. A result of this process has been the introduction of a large number of different approaches even for the same types of project. Consequently, the Clean Development Mechanism Executive Board devised some approved consolidated methodologies. These require the survey and standardised supply of site-specific information concerning for example baseline construction, the additionality test, environmental impact assessment, and monitoring.

Every Clean Development Mechanism project activity has a defined project cycle (see Figure 1) that is pre-determined by the United Nations Framework Convention on Climate Change [8].

Phase	Activity	Responsible Party
Project Preparation	Project Design Document	Project Developers
	Host Country Approval	Designated National Authority
	Validation	Designated Operational Entities
	Registration	Executive Board
Project Implementation	Financing and Implementing	Project Developers
	Monitoring	Project Developers
	Verification and Certification	Designated Operational Entities
	Issuance of Certified Emissions Reductions	Executive Board

FIGURE 1: CLEAN DEVELOPMENT MECHANISM PROJECT ACTIVITY CYCLE [8]

Project preparation phase

The project developers identify an opportunity for a Clean Development Mechanism project and develop a Project Design Document. The Project Design Document describes the project and comprises a baseline study, monitoring plan, stakeholders' comments and details on ecological, socio-economic and development effects. It builds the basis for the project evaluation by a Designated Operational Entity. Once the project is validated by the third party and approved by the Designated National Authority of the host country, it is registered by the Clean Development Mechanism Executive Board.

Project implementation phase

Next is the financial structuring and securing as well as the implementation of the project. During operation project performance is measured by the project developers. The project developers provide monitoring reports on emission reductions at regular intervals to a, usually different, Designated Operational Entity. After verification against the validated design and baseline project performance is verified, emission reductions certified and finally issued by the Clean Development Mechanism Executive Board.

Most of these questions have already been addressed before in the context of Environmental Management Accounting and appropriate approaches have been proposed. However, the latter has not yet been referred to in discussion about the Clean Development Mechanism although Environmental Management Accounting comprises a large range of different methods and systems that are required to record, analyse, control and report

environmental impacts as well as environmentally induced economic impacts. In the next section, a framework for Environmental Management Accounting relevant to the Clean Development Mechanism activity cycle is introduced.

III. ENVIRONMENTAL MANAGEMENT ACCOUNTING

Environmental Management Accounting is a part of accounting infrastructure designed to provide environment-related information to managers to help increase awareness of company-related environmental impacts and to uncover financial benefits and cost savings that can be gained from addressing environmental challenges facing the business [9]. It incorporates a relatively new set of management tools that help companies seeking to improve their environmental and economic performance.

Burritt et al. develop a framework [10] that categorises the large range of Environmental Management Accounting tools according to the widely accepted differentiation between company impacts on the environment (providing Physical Environmental Management Accounting information) and environmentally related impacts on the economic situation of companies (providing Monetary Environmental Management Accounting information) (see Figure 2). The conceptual framework aims at facilitating and promoting the introduction of Environmental Management Accounting by linking different decision-making contexts, information needs of managers and Environmental Management Accounting tools. This is reflected in the further classification based on time-frame, length of time frame, and routineness of information underlying the conceptual framework, leading to sixteen possible decision settings in which Environmental Management Accounting could provide relevant information to management [11]-[13].

		Monetary Environmental Management Accounting		Physical Environmental Management Accounting	
		Short-term	Long-term	Short-term	Long-term
Past or present oriented	Routinely generated	Material and energy flow based cost accounting	Env. induced capital expenditure and revenues	Material and energy flow accounting	Env. capital impact accounting
	Ad hoc	Ex-post assessment of relevant env. costing decisions	Post-investment assessment of individual projects	Ex-post assessment of short-term env. impacts	Post-investment appraisal of physical env. investment
Future oriented	Routinely generated	Monetary env. budgeting	Env. long-term financial planning	Physical env. budgeting	Long-term physical env. planning
	Ad hoc	Relevant env. costing	Monetary env. investment appraisal	Tools designed to predict relevant env. Impacts	Physical env. investment appraisal

Boxes [grey]: Tools that provide information for use in the Clean Development Mechanism investment and control process

FIGURE 2: FRAMEWORK OF ENVIRONMENTAL MANAGEMENT ACCOUNTING [10]

The use of Environmental Management Accounting tools for investment in and control of Clean Development Mechanism projects is described next.

IV. USE OF ENVIRONMENTAL MANAGEMENT ACCOUNTING FOR PROJECT INVESTMENT

Two Environmental Management Accounting techniques can be used to address two principal Clean Development Mechanism investment issues in the project preparation phase: the calculation of expected emissions reductions and the calculation of expected additional revenues from selling certified emissions reduction.

Calculation of expected emissions reduction

Formal registration of Clean Development Mechanism projects requires the calculation of expected emissions reductions when implementing the new clean energy technology. For verification purposes calculations need to show by how much the investment reduces greenhouse gas emissions relative to business as usual. Of particular interest is that the project must not have happened without the Clean Development Mechanism. Environmental Management Accounting information is made available here by ecological investment appraisal. The basic notion is to provide physical environmental information that helps to assess the ecological effectiveness of the planned project or to facilitate an environmental comparison between investment alternatives.

Calculation of expected additional revenues from selling the carbon credits

The second Environmental Management Accounting application aims to assess the contribution that the environmentally relevant impacts of the planned Clean Development Mechanism project make to the expected economic success of the entire project. Monetary environmental investment appraisal enables the project developer to consider potential revenues gained from the reduction in carbon dioxide equivalent (CO_{2eq}) emissions through the Clean Development Mechanism scheme. Taking these additional revenues into account in the investment appraisal can make the project more acceptable for the investors as it enhances project viability.

V. USE OF ENVIRONMENTAL MANAGEMENT ACCOUNTING FOR PROJECT CONTROL

Eco-control supports the integration of environmental concerns within the process of management control [14]-[16]. Important components within the formalised planning, implementation, and control procedures are the identification of relevant material and energy flows as well as budget settings and control.

Monitoring of emissions and related costs and revenues

For the Clean Development Mechanism, companies have to specify how they monitor emissions reduction during the implementation and operation of the project. Regular monitoring of and reporting on the periodic calculation of the reductions of greenhouse gas mitigation is a condition for verification, certification and issuance of carbon credits. The gathering of physical environmental information on a regular basis including amounts of material and energy usage relating to the past for control purposes is addressed by material and energy flow accounting [17]-[19]. To ensure cost-effective implementation of the project activity companies can make use of corporate environmental cost accounting approaches [20]-[22]. In recent years, considerable development has been made in material and energy flow related approaches that help to identify and consider investment-relevant environmental costs, such as through flow cost accounting [23], [24].

Budgeting of emission reductions and related costs and revenues

To manage and control emissions reduction and to achieve the emission targets of a project activity (e.g. by initiating actions to correct unacceptable deviations from plans) environmental budgeting provides a useful framework for corporate management [25]. In physical terms environmental budgeting can be seen as budgeting based on material and energy flow activity [26]. Material and energy flow activities can be reflected n environmental resources or issues, such as climate stability, land or water, which are broken down to environmental indicators, for example CO_{2eq}-emissions in tonnes per year [27]. Likewise, linking physical measures with cost, revenue, liability and asset information and integrating this information in budgeting processes helps with the planning, implementation, control, and coordination of the emission reduction project activity [28], [29].

Post-investment assessment of investment project

Actual physical and monetary figures using material and energy flow accounting and flow cost accounting can be used for re-assessing the investment decision once commenced and as an ongoing check on the assumed costs and benefits revealed by investment calculations in the environmental context [30], [31]. Such ex post analysis allows the management to decide whether the company wishes to continue with the investment.

VI. CONTRIBUTION TO SUSTAINABLE DEVELOPMENT EVALUATION

In a broader sense, Environmental Management Accounting can also contribute to accounting for project activity to assist in achieving sustainable development of the Non-Annex B country [32]. In contrast to the assessment of the greenhouse gas emissions reduction, the project activity's contribution to sustainable development is assessed by the Designated National Authorities of each clean development mechanism host country. The extent and accuracy of sustainability aspects to be considered while designing Clean Development Mechanism project activities differ from country to country. To date, validation and registration of the Clean Development Mechanism project activity requires a verbal explanation of its contribution to sustainability and is only addressed by the Designated Operational Entity if sustainability issues are included in the monitoring protocols.

VII. SUMMARY

The paper developed conceptual linkages and illustrated how Environmental Management Accounting can enable companies and organisations to streamline development and monitoring of Clean Development Mechanism projects. It shows that Environmental Management Accounting: assists companies to obtain the necessary and higher quality information for use in the Clean Development Mechanism investment and control process; helps companies in developing countries to measure, analyse, monitor, control and demonstrate the environmental and social impacts of projects; shows where improvements to the financial bottom line occur through engagement with Clean Development

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Environmental perception and practices: a dilemma in environmental sustainability accounting. A case study of coal mining communities in Witbank (South Africa)

CMA Ntui*, HJ Annegarn, CJ Cooper
Department of Geography, Environmental Management and Energy Studies,
University of Johannesburg, Auckland Park 2006, South Africa.
E-mail: ntui2000@yahoo.co.uk

Abstract: The World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 laid down principles for implementation of integrated environmental management and sustainable development as a millennium goal, through corporate, public and community partnerships. Imbedded in the Millennium Development Goals (MDGs) are poverty alleviation, unemployment, education, sustainability through environmental sustainability accounting and reporting, availability of information. In this context, a study was initiated among coal mining communities of the South African Highveld. The study was based on the use of questionnaires, comments and interviews, assessed levels of awareness of coal-mining related hazards, changing practices and perceptions in the low income communities surrounding the mines (and the homes of many of the mine labourers). This paper presents results of an assessment, undertaken in the eMalahleni Local Municipality (Witbank), of community vulnerability to coal mining related hazards as a factor of perception. Results obtained shows social hazards associated with coal mining and domestic usage of coal. Many factors were considered such as poverty, illiteracy and absence of environmental education programmes to inform and educate the communities. These factors were associated with perceptions of an unwillingness of the local Municipality and the mining companies to provide environmental and health information on coal use to communities. Such absence of environmental sustainability accounting and perceptions cumulatively increase the vulnerability of such communities to coal-related physical and social hazards in various forms.

Keywords: coal mining, social hazard, community vulnerability, environmental perception, environmental sustainability accounting, South Africa, Corporate Social Responsibility.

I. INTRODUCTION

Coal mining and processing remain one of those primary activities with severe environmental consequences, from scoping to actual production phases. This is not limited to any specific coal mining practice or any specific country. Coal mining is both a labour and capital intensive activity - this implies that is a magnet to attract labour, skilled and unskilled. It is also a potential source of enforced informal settlement, for the lowest income bracket of mine-workers, and the inevitable informal traders and service providers. that are attracted to mining settlements. Such informal settlements lack basic amenities, accentuated by poverty, illiteracy and lack of environmental information. Coal-burning in such communities remains the lowest cost and affordable means of energy provision.

The production of coal as a low cost energy for development in developed and developing countries are associated with social and economic gains. These gains are not without associated hazards. Hazard is defined as any activity or action that has a potential to cause harm [4]. Hazards are classified as physical and social. Physical hazards consist of direct impacts to landscape, such as coal dust, vibration, explosion, spontaneous combustion [1]. Social hazards are secondary and indirect impacts from the physical processes. These include impact on physical health, dilution of cultures, prostitution, retrenchment of workers, impact on agricultural lands and agric-economic cycle, forced migration and other social decay. The fact that social impacts are often gradual, results in little concern being expressed to mitigate such risk. Initially, this research was intended to assess communities, municipality and companies on the state of environmental management and prevailing social hazards in communities. From the inception, companies declined participation based on the sensitivity of the research, while municipalities drop out, claiming there was insufficient political exposure. Many factors were considered in examining, reasons for the bypass of social hazards on individuals and communities.

This research was conducted in the province of Mpumalanga in South Africa. Mpumalanga is South Africa's premier province for coal production and processing. Located within the province are numerous clusters of informal settlements around active and abandoned coal mining sites, with insufficient amenities and social decay. Although the World Coal Institute (WCI), World Summit on Sustainable Development (WSSD) and Minerals and Petroleum Resource Development Act (MPRDA) call for sustainable mining communities [3], there is insufficient evidence to term any of such settlements as sustainable mining communities.

II. DESCRIPTION OF RESEARCH AREA

Historically, until the advent of the new South Africa in 1994, there were four provinces: Kwa-Zulu Natal, Transvaal, Orange Free State and the Cape. After the

advent of democracy, South Africa was divided into nine provinces, with the former eastern Transvaal becoming a province of its own, known as Mpumalanga (Figure 1). Mpumalanga is located within 25°–27°S and 29°–32°E covering a range between 1200-1800 m above sea level. Mpumalanga includes the Highveld coal fields centered on Witbank [3].

FIGURE 1. LINKED MAP SHOWING RESEARCH AREA, FROM NATION, PROVINCIAL TO MUNICIPAL.

This research was conducted on a number of formal and informal settlements within the eMalahlani Municipality (formally the town of Witbank). Settlements covered include Clewer, Kwaqwaqa, Extension 1-10, Zone 1-4, Vosman, Ackerville, Lynville and a portion of Witbank (Figure 2).

III. METHODS

The following data collection techniques were used; questionnaires, comments, interviews, focus group discussion, personal observations and photographic shoots taken on field works. A number of issues were assessed from individual to communities. Aspects assessed include environmental awareness, environmental education, environmental information and transfer, opinions, changes in perceptions and practices. In total 19 items were identified, spread over four broad headings of Health and Safety, Disaster Preparedness and Awareness Responses, Strategic Environmental Management and Environmental Legal Application and Compliance. The four broad heading were placed under individual and community environmental awareness, mitigation measures, managerial decisions and policy tools.

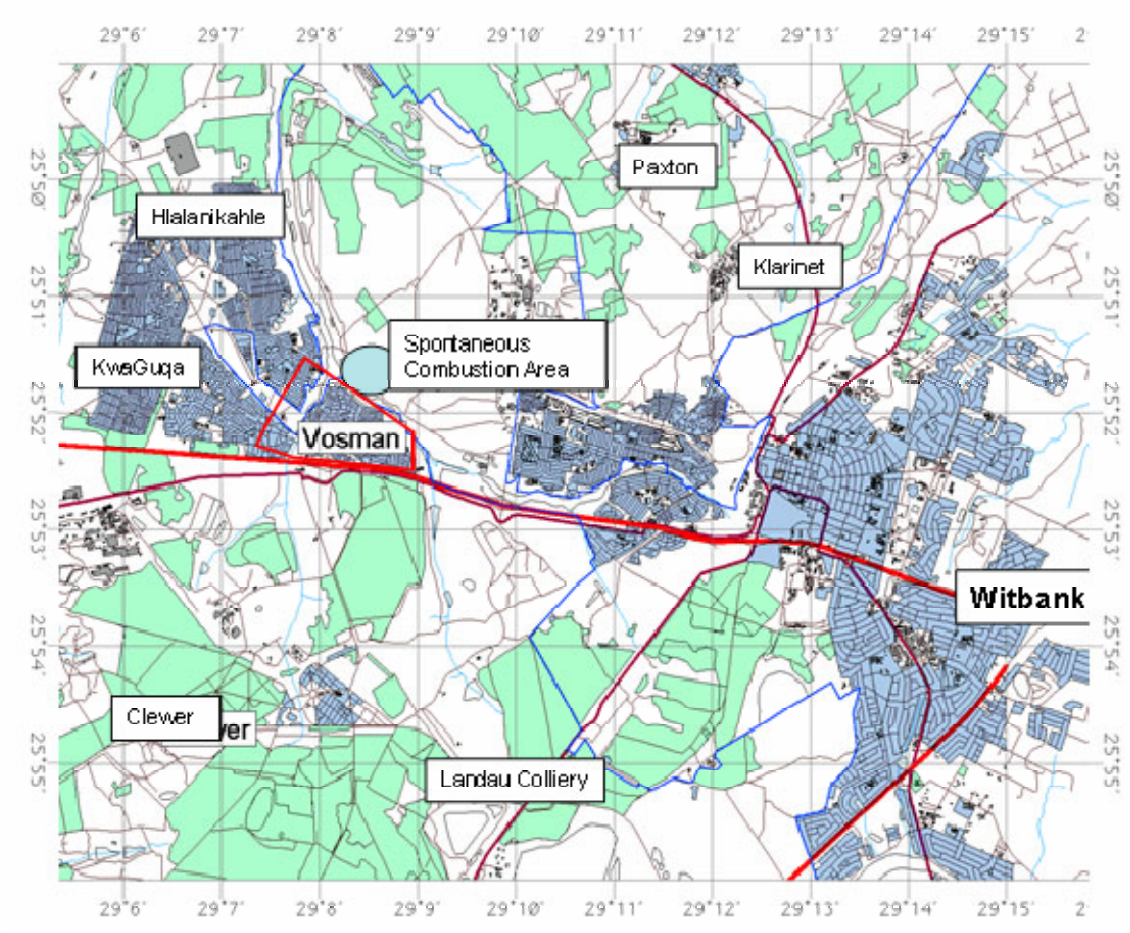

FIGURE 2. CADASTRAL MAP SHOWING RESIDENTIAL AREAS AND PROXIMITY TO MINING SITES.

Questionnaire data. Questionnaires are the main instrument for data gathering in this research. Questionnaires were administered to schools and communities, using certain selection criteria to refine acceptability of completed forms. To qualify, the respondent should have lived within a community

uninterrupted for at least three years, and a minimum age restriction of at least 16 years was applied. In schools, only senior learners in grades 10 and 11 were invited to participate. Grades 12 were exempted so as not to interrupt examination preparations. On the top of each questionnaire form, personal details were required. Questionnaire forms made provision for individual voluntary comments. Questions were structured as level-one and level-two questions. Level-one questions required a tick response selected from four options: *YES, NO, SOMETIMES, OTHERS* - representing yes for certainty, no for certainty, sometimes for uncertainty, and other for no idea at all. Level-two questions allowed for a broader response, requiring a short phrase response. It was intended to assess opinions and perceptions. Abstainers were also factored as perception. There were four separate questionnaires, dealing with four separate topics: Health and Safety; Disaster Preparedness and Awareness; Strategic Environmental Management; and Environmental Legal Application and Compliance. Respondents were invited to participate only to one specific questionnaire. Overall, a total of 6 620 acceptable questionnaires were obtained from community participation, shared among the four topics as shown in Table 1.

Comments. Individual voluntary comments were accepted. Each questionnaire form had a voluntary comment opportunity at the bottom. There was no restriction or limitation on the scope for comments. No comment was rejected on the bases of scope or thought. Comments were broadly based, covering mostly areas not identified by structured questions. A sum of 638 comments was obtained from community participation (Table 1).

Table.1: Overall responses by category from validated questionnaires and comments, used as input for the statistical analysis

	Health and Safety	Disaster prepared-ness and aware-ness respon-ses	Strategic environ-mental manage-ment	Environ-mental legal applica-tion and compli-ance	Total
Question-naires	2262	1886	1254	1375	6620
Comment	186	138	196	130	638

Interviews. Interviews were conducted on a strict selective principle. Only persons of influence and elders of communities were interviewed. The following personalities were interviewed: Mayor of Municipality (eMalahlani Municipality); Speaker of Municipality; Councilor of Ward 9; project co-coordinator of Basa njengo Magogo (an environmental training programme then current in the same area); a community elder; and the project translator. Only the Speaker of municipality was available to be interviewed twice, once on the occasion of the inauguration (installation) of an air quality monitoring station, and in his office after a plenary session of councilors. Interviews were conducted on structured questionnaires and some interactive questions.

Plenary session (focus group). A plenary session of councilors, chaired by the speaker of the Municipality was held. The plenary was attended by 12 of 40 councilors, excluding the high table. The plenary was intended to conduct a discussion debate on mining environment and community social status. The session went well - a presentation was given, followed by a question and answer session.

Photographic and visual observation. Photographic shots and observational notes of environmental features and hazards were taken during field trips. These photographs were taken as illustrative evidence of the state of community affairs and the environment.

IV. Analysis and Results

A simple analytical technique was used. Data collected were placed on an Excel spread sheet under the following category of yes, no, sometimes, others and abstainers. In most cases looking at the complexity and range of responses, level-two questionnaire inputs were attached on separate tables. A simplified computer graphic representation was plotted from the Excel spread sheet. Two graphic representations i.e. bar graphs and pie charts were used to illustrate data obtained. The graphic representation was further given percentage scaling. Data were analysed as follows:

Questionnaire. Analysis was done per section and per item. For interest of this paper, analysis is done per section.

Health and Safety. Five aspects were identified namely: Dust exposure, Noise and vibration, Temperature and heat exposure, Various gases,Health and hazards.

Disaster Preparedness and Awareness Responses. Four aspects were identified namely: Coal fires, Explosives, Air monitoring, and Underground surveillance.

Strategic Environmental Management. Five aspects were identified: Environmental hazards and planning, Environmental research on hazards, Equipment on hazard management, Monitoring and control systems on hazards and Improve risk and awareness practices.

Environmental Legal Application and Compliance. Five aspects identified were Environmental legislations on hazard, National Environmental Management Act (NEMA), Environment Conservation Act, Minerals Act 36 of

1991, and Minerals and Petroleum Resources Development Act (MPRDA).

Health and Safety analysis. From the general performance, it is clear that individuals and communities are aware of the various health hazards such as heat, dust and air quality, noise and vibration. They are not aware of any form of education on the identified hazards. There are no communications or available information from companies or the municipality on these health hazards. Individuals and communities are interested to know how companies manage the various hazards.

Disaster Preparedness and Awareness Responses. General questionnaire performances show the following: Individuals are aware of some existing and potential hazards in the communities. Most of the named hazards were physical and a few of social hazards. Individuals and communities have no mitigation measures to the identified named hazards. There is no information available. There is no education either formal or informal. There is a lack of communication between communities, companies and municipality. There is an outspoken willingness to learn about various social hazards in communities, and of company's measures to mitigate them.

Strategic Environmental Management. This questionnaire was intended to assess companies and municipality performance on environmental decisions and steps in community environmental management. Individuals and communities were assessed to find out levels of awareness in company and municipality policies and practices in community environmental status. General community output provided the following indicators: Individuals and communities are not aware of environmental decisions in communities. There are no information, education and communication between companies, municipality and communities on issues of environmental management. There is a strongly expressed desire to know company and municipal policies on community environmental and social issues.

Environmental Legal Application and Compliance. Intended to assess individual and community knowledge on environmental legislation, its application by companies, and enforcement by municipality on companies. Overall performance read as follows: Individuals are able to identify a few items of environmental legislation, though generally they are not very knowledgeable with the scope of the (new) environmental legislation. They are not aware of its application and the MPRDA transformation of mining communities. There is no information, education and communication between companies and municipality on the one hand, and communities on the other on environmental matters. Communities are not aware of and had never participated in the public participation processes that are a legal requirement under the National Environmental Management Act (NEMA), specifically with respect to application of environmental legislation to companies in relation to licensing, expansion or new capital developments. There is an overwhelming willingness to know in what way environmental legislation is applicable to communities.

Comments. A total 638 comments were obtained in the process of administering questionnaires (Table 1). Comments inputs were broken down and categorized into seven headings, namely: causes of harm; causes of illness; for example asthma, TB; education on risk; company or municipality negligence; other issues not covered; and lack of information. In the course of categorizing comments, the following statements were most commonly used:

Help educate or inform us of the hazards.

I am interested to know more about hazards.

Companies should relocate away from communities.

Companies are interested in jobs and neglecting other issues.

No information what so ever.

Mining should benefit all stakeholders and such good relations should exist

Companies should take responsibilities for their actions.

Companies always forget their social responsibilities.

Companies should provide the means and information.

Government must force companies, they just do what they want.

Smoke from mines pollute and contaminates.

Councilors did not inform us.

Access to information that concerns the Minerals Act is not applicable in communities.

In analyzing the comments, two aspects were most commonly used: (i) lack of education on risk of hazards; and (ii) lack of available information. These two aspects commonly were identified as a major cause of other weaknesses. For example, poor identification of what constitutes a hazard and what are managerial policies and tools. Another weakness was company and municipality negligence to communities. This raised issues not covered in structured questionnaires.

V. Results and Interpretation.

After analyzing the various data and other evidence obtained from communities, various arguments were put across. Many thoughts and questions were asked. Why did companies decline participation from the onset of this research, if they are regular with environmental requirements as deemed by WSSD, WCI, and various South African legislations? Why did municipality pull out from effective participation? Why did the intended rescheduled plenary session of councilors never take place? Why is there an absent in public participation during the EIA processes?

The overall results show that individuals and communities are aware of some hazards, mostly the

physical, by intuitive knowledge acquired by longevity of exposure. There are sufficient facts that education and information on environmental impacts are absent. Public participation and awareness, a form of environmental education during impact assessment process is also absent. Although individuals are willing and interested to know about hazards that surround them, companies and municipality are passive about the communities in this regard. This evasive attitude by companies and municipality revolves around power, perception, opinion and environmental politics.

Perception and opinions on environmental management varies within categories of people and professionals. Environmental perception and opinion includes personal and collective behaviour and thoughts towards the environment by various groups. The various groups include environmental field practitioners, those working in companies, non-governmental organizations (NGOs), environmental activists, environmental legal practitioners, municipal officers, ward councilors and community dwellers.

The hierarchical arrangement of the various group of people interested in the environment, shows the level of environmental awareness, environmental influence and manipulating capacity in a descending order. The level of environmental awareness is high within field practitioners working in companies, especially those working in mining companies. This also determines their influences. They determine what is researchable or not in a mining company and the mining environment. They also determine what information can be released or withheld as considered confidential. Evidence is drawn from this academic research, where mining companies operating in the area of study declined effective participation (despite formal introductions from long time academic consultants to the same companies and individuals). Environmental researchers in this regard are seen as witch hunters.

A similar trend flowed through the municipal officers, ward councilors and community dwellers. Senior municipal officers, for example, the mayor, speakers and secretary at the mayor's office are aware of the state of environmental affairs. They are further aware of the various legislations and responsibilities. They however down played the legislation and associated responsibilities. Evidence is drawn from the focus group or plenary session of councilors and interviews conducted with the mayor and speaker. Both high level civil servants are aware of their environmental responsibilities. Councilors reversed the session - instead of responding to structured questions from the researcher, they were posing questions to him. An implication is that they are not aware of environmental reporting in their wards. The interviews also show that both the mayor and speaker made reference to an environmental committee, with associated committee portfolio documents. The environmental committee minutes and environmental portfolio were never made available, possibly implying that not all of these documents existed.

Communities are the least aware and informed group of people on environmental management. The last question in most of the questionnaire forms read as follows: Are you willing/ interested to know about environmental hazards in your community? The responses to such questions have been more than 70% willingness. There is also sufficient evidence from questionnaire responses and categorized comments, that there is a lack of environmental education, information and communication. This lack placed communities in a more vulnerable position with respect to adverse environmental social conditions. Those in power and position of influence e.g. company's environmental practitioners, view environmental hazards from a social dimension differently. So long as it does not impact on production directly and immediately, then there is no impact. Municipal officers regard themselves as accountable to communities only on service delivery. They had poor or absent realization that services are delivered in a good living environment. Thus, a good environment is a requirement for good services. This is attributed to various factors: (i) there are few environmental practitioners and inspectors to supervise and enforce environmental legislation in South Africa; (ii) environment legislation (green laws) are new in application; (iii) other legislation counteracts the green legislation; (iv) green legislation does not generate sufficient remuneration to legal experts; (v) legal experts are not very certain of green legislation and of State enforcement capabilities and punitive measures; and (vi) there are no specific courts for environmental defaults and claims. All of the above comprise a cycle of environmental perception, which in turn impacts on environmental practices.

VI. Conclusion

Assessing from the various data collected through questionnaires, comments, interviews, plenary session of councilors, personal observation, and photographic shoots taken, the followings were concluded. Environmental management is still a concept. There is no hope for a sustainable mining community in the immediate future. Mining communities lack basic requirements of a good environmental practice, like education on mining risks, available information on mining practices and communication as they affect surrounding communities (including also their own workers while off duty). There is little public participation on environmental management in communities. This is attributed to various facts outlined above, as well companies' unwillingness to share with

communities. Communities, often illiterate and impoverished, are left dumbfounded, with no way to turn. Lack of public participation and access to information is a factor of poor communication techniques by companies, local and regional government that results in exclusion of community voices. Further weaknesses lie in lack of feedback to communities. Research done on mining environments seldom filters into the communities that participated in the research process. Such research documents are either left in the shelves of the universities or the offices of the mining companies and municipality.

VII. ACKNOWLEDGEMENTS

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The Change of Automotive Industry and derived impacts for component suppliers' sustainability oriented managerial accounting

Thomas Heupel
Fachhochschule für Oekonomie & Management (FOM) University of applied science - Leimkugelstraße 6
45141 Essen (Germany)
Email: thomas.heupel@fom.de
E-mail: corresponding.author@email.com

Abstract: **After the "lean production" in the 80's, the automobile industry finds itself in a new state of upheaval: By the year 2015, the supply businesses of the Automobile industry will take over development and production of the automobile manufacturers and through this could grow by 70%. The manufacturers will give up about 10% of the value added, but increase their output by about 35%. These findings have been taken from a collective study, the "Future Automotive Industry Structure (FAST) 2015", by the Fraunhofer-Institute, the IPA and Mercer Management Consulting. Considering the structure of the supply industry, this mid-sized economy isn't optimally prepared for such an increase.Therefore a questionnaire of a recently founded automotive network in Germany should provide information about the state of the art managerial accounting. Furthermore the analysis should identify existing opportunities to integrate sustainability oriented cost accounting tools (like Environmental cost accounting, eco-benchmarking, ABC-analysis etc) and even strategic management instruments with a sustainability focus (like life cycle assessment, social balancing, life cycle costing, environmental performance measurement, environmental and social information systems, etc). Recapitulatory: Are there any chances to integrate sustainability oriented controlling aspects into this very important industry sector? Depending on the size of the company and their involvement in the value chain of the automotive industry groups (as tier 1,2,3 and tier 4 suppliers) can be clustered and suggestions for the development of their sustainability oriented cost and managerial accounting toolsets and recommendations for the implementation can be given.**

Key Words: **automotive industry, questionnaire, cost accounting, controlling, cost management, SME**

I. PRIOR WORK

The controlling function in middle-sized businesses will be perceived as the sideline job of the upper management. In one of the Berens / Püthe / Siemens studies from 2005, only one fifth of the interviewed businesses had their own controlling branch. Most of these also have comprehensive responsibilities for accounting and other control responsibilities such as: liquidation planning or preparations for year's end. Further examining the cost accounting practice in SMEs, the studies have come to a very important finding: In these companies, a full cost based design of the cost accounting system dominated (88%). Direct cost accounting systems have a lower distribution (49%), and newer cost accounting methods, such as process cost accounting or target cost accounting, were barely used (Währisch 1998).

Through the expected concentration of the automobile manufacturers on marketing and strategic planning over the next years, the supplier will become increasingly involved in both the design and production of complex components. This involvement especially concerns body work, metal sheeting, undercarriage, and finishing work. The assembly and installation of airbags and other components are also being taken over by the supply industry. As explicated above, the structure of this branch is dominated by SMEs which do not appear to be optimally prepared for future managerial accounting duties. Reflecting the "FAST 2015" study, changes in the automotive supply chain form the considerable need for a change in the managerial and cost accounting practice of SMEs. The competence of simulta-neous engineering is also required for the smaller businesses as target costing, direct costing, ABC-costing etc. From that, one can deduce for the different supplier types of SME, that the existing management must be strengthened in both breadth and depth. There exists little room for improvisation. Only continuous and valid data can deliver the required information for future decision needs.

Design of the survey and hypothetical development of environmental management accounting: For the identification of specific management recommendations (for different types of businesses) the SME research institute in Siegen, has formulated a questionnaire on the managing experience of automotive supplying companies (belonging to the "Auto-motive network Südwestfalen" and the network "Automotive-Rheinland"). Beneath the company specific knowledge of controlling the implemented conventional cost and managerial accounting instruments are going to be identified. For the identified groups (smaller suppliers with tier 4 or tier 3 statuses, mid-sized SME with tier 3 or tier 2 statuses and even the system suppliers with a tier 1

status) a wider controlling toolset can be specified containing even sustainability oriented strategic and operative instruments. If for example the smaller businesses - which mostly have tier 3 status - cope with their duties and responsibilities of the managerial and cost accounting complete alongside their day to day work of the business and have no department for accounting, they probably have only a reduced toolset available for strategic and operational management and calculate on the basis of full cost, have only a simple customer analysis and have no strategic planning. Instruments such as target costing, standard costing, or life cycle costing are not implemented here. Hence, basic environmental management and environmental cost accounting instruments such as ABC-analysis, eco-benchmarking, waste balancing and flow cost accounting should be suggested as a first step into operational environmental management. Instruments like life cycle assessment and social balancing should be imple-mented in a later stage.

The results of the questionnaire and the recommendations for the different groups of suppliers will be discussed in the automotive network and could be of interest for participants of the EMAN-conference as well as for all SME in a worldwide automotive supply chain.

An Environmental Protection at the Company-Level

Ilona Obršálová, Marcela Kožená
Faculty of Economics and Administration, University of Pardubice, Studentská 95, CZ – 530 10 Pardubice, Tschechien,
University of Pardubice, Studentská 95, 532 10 Pardubice, Czech Republic
E-mail: Marcela.Kozena@upce.cz, marcela.kozena@upce.cz

***Abstract*: The paper is focused on sustainable development strategy application at the company-level. There are recognized key factors of internal and external company environment; the aim is evaluation of company approach to the environmental protection. The influence of sustainable development strategy on competitive ability of company is discussed. The results of research of voluntary environmental activities in Czech entrepreneurial environment are mentioned.**

I. INTRODUCTION

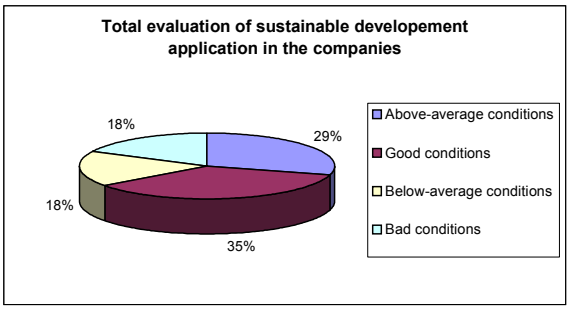
The progressive exhaustion problem of unrecoverable natural resources, energy deficiency, biosphere degradation and also the environment destruction belong to the present global problems. The environmental degradation causes were some unmanaged implications of the scientific and technical progress and economical growth whose results were above all mass production of different wastes. A solution is offered by a sustainable development approach considering ecological tolerability of planned and realized activities.

II. PAGE ABSTRACT

An application of environment protection instruments (AEPI) and their successfulness depend on implementation of sustainable development strategy to all company activities. AEPI should be respected a company strategy reconstruction as well as took into account the company goals. A dimension of external and internal company surrounding is very important for a selection of an optimal variation. Company management should be informed about the requirements of the present and potential customers and the company strategic conceptions should be considered them.

The research results show that the participating companies in environmental pollution most try to improve their behaviour. These companies utilize the tools to prevent and to eliminate environmental pollution at least. An evaluation of sustainable development application was performed in co-operation with executives of marketing and ecological divisions in the companies. The research shows positive management approach to the voluntary environmental activities of involved companies to prevent environmental damages.

CHART NO. 1: TOTAL EVALUATION OF SUSTAINABLE DEVELOPMENT APPLICATION IN SELECTED COMPANIES



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Application of Sustainable and CSR principles in a Business Simulation

Tibor Kiss
University of Pécs, Faculty of Business and Economics, Institute of Economic and Regional Studies,
Pécs, Rákóczi u. 80, H-7622, Hungary
E-mail: corresponding.author@email.com

***Abstract*: Business Simulation Challenge (BSC), as a green simulation was launched at 2003. The simulation contained basic sustainability principles and was appropriate to picture the benefits and drawbacks of green business behaviour. Since then number of practical evidence, theoretical work broadened the field of conscious business attitude. The new version of the BSC has a refined set for sustainable business practices and involves the Corporate Social Responsibility of companies to the simulation.**

The Business Simulation Challenge (BSC) [1] is an interactive learning vehicle that can help the student to acquire the managerial competencies required to manage in a competitive economy. The simulation enables the participants to acquire skills and knowledge of functional areas, as well as, to develop an understanding of the relationship of those functional areas in the organisation.

The BSC integrates various "desirable" elements for developing modern business managers. The simulation attains the development of these business competencies within an educational and learning environment for the advancement of future businesses.

The other benefits of the BSC are that the program will help to acquire knowledge about the different functional relationships of a company, and in the same time, it will be able to develop a strategic mindset, because the game compels participants to think strategically

The BSC – as a basic simulation game - has a number of unique features. First, it can operate in two languages (now they are English and Hungarian). Moreover, the program can be easily modified to accommodate other languages. Second, based on the "white box theory", the students have access to detailed analysis of each functional area. Third, BSC allows the students to choose between practice (playing against the computer) and competitive (playing against other students) mode. Fourth, the development of the functional areas used in the BSC contains new concepts and methods.

Broadly, business simulations have a multitude of different purposes. The objectives vary according to the purposes and rational for which the game was developed. As a functional game that needs a strong strategy behind, is suitable to involve the necessary empirical and theoretical developments. Such developments are *Sustainable Development* and *Corporate Social Responsibility*.

In 1990 business leaders founded the World Business Council for Sustainable Development (Stigson, Rendlen, 2005), and since then several companies introduced sustainable principles into their everyday practices (Holliday et al., 2002). The corporate social responsibility (CSR) is also a hot issue on a business level, several books and articles are dealing with the role, the necessity and the real effect of CSR ([5], [6]).

The BSC uses a basic set of tools for sustainability: investment, product development and market extension are the three tools applied. The type of investment and products developed determine the green level of companies, and as a reward, they deserve additional market share. Participants are able to test the return of more expensive green investment. The efficiency of the applied tools is already proved [2].

In order to distinguish two main types of CSR, a market segmentation is applied, where there are cost effective, sophisticated and green customers. The simulation uses a general green policy, where the firm would create a green image for itself with such actions as promoting schools, music events. The other type of CSR activity is the development of products, demanding real needs of green customers, such as bio-products. Both CSR activities will effect on its place, and influence the profitability of the company.

The evaluation system of the BSC based on the Data Envelopment Analysis [7], where the profitability and the CSR-Sustainability performance of the companies will equally evaluated.

The danger of financial loss practically ceases in the case of computer simulation although it will not be a real life experience. This is because in gaining experience people would make mistakes and this would result in financial penalty. In the case of these new principles, like sustainability and CSR, this feature of the business game is especially important.

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Extended abstract / Steel works enterprise environmental responsibility and market competition: a Romanian case study

Tabără N., Ariton D., Nuță A., Nuță F.
"Alexandru Ioan Cuza" University of Iaşi, Carol I, 11, 700506, Iaşi, Romania,
"Danubius" University of Galați, Lunca Siretului, 3, 800416, Galați, România
florian100780@yahoo.com

I. INTRODUCTION

The company that we are studying in this paper is a multinational steel works enterprise that put a great deal of importance on environmental and social responsibility reporting (environmental investment report, water consumption report, green tax report, department of trade and economy reporting, ground water at the industrial scrap storehouse reporting, etc.). The eco-efficiency analyze is considered by the company's high management as a key factor for deciding the future for the production centers (such as zinc baths operations).

The cost savings identification process shows that one factory has the best performance in zinc utilization, other has the lowest energy costs and the third has the lowest variable conversion costs. Which location should be the best choice having all these aspects in mind?

This is the question that an integrated environmental management accounting system should be able to respond. We are seeking for the possibilities to implement such a system into a Romanian enterprise.

II. ENVIRONMENTAL ISSUES MONITORING AND REPORTING

The main environmental related issues to approach for the steel company are monitoring and reporting: the polluting factors and activities related to the pollutants, according to the Integrated Environment Authorization. These pollutant indicators are presented in the table 1.

Besides pollutant indicators reporting, the company reports about: environmental investments, water consumption, green tax, ground water at the industrial scrap storehouse, etc.

The latest main environmental investments include the construction of platforms for sampling at the chimneys to exhaust pollutants in the air and the greening of the polluted land. The CSR program is focused on supporting a scholarship for environmental engineering studies.

FIGURE 1: THE STRUCTURE OF ENVIRONMENTAL MONITORING AND REPORTING

Emission source	*Pollutant (indicators)*	*Monitoring gaze*
AIR		
Pickling bath	HCl	every quarter
Galvanizing bath	ZnO	every month
Preheating and drying furnace	NO_2 SO_2 CO Dusts	every month
WATER – The water purged in the sewer system		
Galvanizing workshop	pH Temperature Suspended matters Ammonia nitrogen Chlorides Iron Lead Zinc	every month
WATER – Ground water		
Galvanizing workshop	pH Ammonia (NH_4) Chlorides Total hardness Total iron content Zinc	every year
SOIL		
Galvanizing workshop	Total chrome content Copper (Cu) Manganese (Mn) Nickel (Ni) Zinc (Zn) Petroleum hydrocarbons	every year

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The Implementation of the Accounting for Sustainability Project Decision-Making Model in Czech enterprises

T. Costa Jordao, P. Hajek
Faculty of Economics and Administration, University of Pardubice Studentská 84, 532 10 Pardubice, Czech Republic
E-mail: ticiano.costa-jordao@upce.cz
petr.hajek@upce.cz

***Abstract*: Sustainability Performance has been addressed as an increasingly important concept in public, private and other sectors over the past few years. Many organisations have strived to establish sustainability strategies aiming at bringing real benefits to all their stakeholders, including the society as a whole. However, a common problem arises when these organisations intend to put such strategies into practice. The unavailability of systems, tools and skills to fully implement these sustainable strategies in the day-to-day decision making have precluded the stakeholders to assess properly the sustainability performance of organisations.**

The Accounting for Sustainability project established by His Royal Highness The Price of Wales in June 2006 emerged as an alternative solution for embedding the sustainability issues in a clear, concise, consistent and comparable way into mainstream external reporting. The sustainability performance is therefore connected with the organisation's overall strategy and financial performance.

This paper contributes to the spread of this efficient tool by bringing ways to implement these methodologies in Czech enterprises based on real case studies. It presents the benefits Czech enterprises may obtain by adopting the Decision-Making Model and the new connected reporting framework of the aforementioned project.s

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Measuring Corporate Sustainability Performance: A South African Perspective

Dr Cosmas M. Ambe
Research Leader: Environmental and Sustainability Management Accounting Research Unit
Tshwane University of Technology, South Africa
E-mail: ambecm@tut.ac.za

I. Abstract

The business case for corporate sustainability has been well documented through the use of a business case matrix which relates ten dimensions of corporate sustainability to ten measures of business success [1]. It is acknowledged that a research gap exist on the business case question on measuring the relationship between sustainability performance, business competitiveness and economic performance [2].

Through the use of a survey, this paper examines the link between dimensions of corporate sustainability and business performance and how the Socially Responsible Investment (SRI) index of the Johannesburg Securities Exchange (JSE) serves as a tool in measuring corporate sustainability performance in South Africa.

The interim results of a survey of 34 companies (which subscribe to the JSE SRI index) comprising of the financial services sector and the mining and petrol chemical sector indicates strong support that corporate sustainability is a driver of firm performance. However very little evidence exists on how the relationship between the two variables are measured The paper provides recommendations towards developing a tool to measure corporate sustainability performance incorporating the JSE-SRI index for South Africa and other emerging economies.

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Extended Producer Responsibility: Implications Of The New Waste Framework Directive On Corporate Sustainability Policy And Programs

Randy M. Mott
CHWMEG Europe, ul. Strusia 5c, lok 13, 05-500 Piaseczno, Poland
E-mail: "Randy Mott" <europe@chwmeg.org>

***Abstract*: One of the basic components of a corporate policy on sustainability and the environment is assurance of proper waste disposal, treatment or recycling. The European concept of "extended producer responsibility" initially applied for products has been extended to production waste by various national laws and now a clear signal in the revised EU Waste Framework Directive. A corporate sustainability policy should provide for "waste stewardship" that recognizes the legal risk of improper handling by third-parties and monitors their actions.**

I. INTRODUCTION

"Sustainability" is one of the most frequently quoted concepts in European environmental policy, but remains poorly defined and virtually impossible to assess or monitor. Nevertheless, a cumulative body of EU regulatory policy and requirements is emerging that contains some core elements of what "sustainability" means in practice. The new Waste Framework Directive emerges as a critical turning point that may compel corporate managers and regulators to start looking "outside the box" on these issues. The new Directive applies the waste hierarchy that favors waste prevention and recycling to producers for the first time and contains several provisions encouraging Member States to adopt new requirements on "Extended Producer Responsi-bility."

Although most of the changes relate to recycling obligations on Member States, which will have to be implemented in national legislation, as well as a new classification of incineration as "recovery" subject to some conditions, the new Directive does affect waste producer liability. Paragraph 26 of the revised Directive states: *"The polluter-pays principle is a guiding principle at European and international levels. The waste producer and the waste holder should manage the waste in a way that guarantees a high level of protection of the environment and human health."* See Article 8, supra ("Extended Producer Responsibility').

This paper will review the "extended producer responsibility" provisions of the new Waste Framework Directive and the role of "waste auditing" meeting those obligations. While the discussion of "sustainability" may remain an intellectual challenge, the practical implications of assuring that a company's waste from production are properly disposed of, treated or recovered remains one of the linch pins of a credible corporate program. Cost-effective methods are available to provide a high-degree of assurance to company management that waste is handled in a proper fashion. Without this basic assurance, much of the "sustainability" discussion will remain academic.

A. The New Waste Framework Directive: Overview

A new Article 8 on "Extended Producer Responsi-bility" for the first time applies the principles previously found only in the industry-specific directives (ELV, WEE, etc.). Section 1 of Article 8 provides:

> *"In order to strengthen the prevention, re-use, recycling and recovery of waste, Member States may take legislative or non-legislative measures to ensure that any natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has extended producer responsibility."* (emphasis added).

While the focus of the obligation is on recycling and recovery of materials in the waste, as an obligation of the producer, there is no doubt that the concept of waste producer has been extended to create a "cradle to grave" approach: "Such measures [required of producers] may include an acceptance of returned products and of the waste that remains after those products have been used, as well as the subsequent management of the waste and financial responsibility for such activities. These measures may include the obligation to provide publicly available information as to the extent to which the product is re-usable and recyclable." Section 2, Article 8 (emphasis added). Article 14 on Costs provides that the cost of waste management "shall be borne by the original waste producer or by the current or previous waste holders." It goes on to say that Member States may allocate such costs "partly or wholly" to the producer.

Later in the new Directive, Article 15, entitled Responsibility for Waste Management," is explicit on the duty of the producer:

> *"Member States shall take the necessary measures to ensure that any original waste producer or other holder carries out the treatment of waste himself or has the treatment handled by a dealer or an establishment or*

undertaking which carries out waste treatment operations or arranged by a private or public waste collector in accordance with Articles 4 and 13 " Section 1, supra (referring to the duties to protect the environment and public health).

Section 2 of Article 15 is the most relevant on liability for ultimate safe disposal or treatment:

"When the waste is transferred from the original producer or holder to one of the natural or legal persons referred to in paragraph 1 for preliminary treatment, the responsibility for carrying out a complete recovery or disposal operation shall not be discharged as a general rule. Without prejudice to Regulation (EC) No 1013/2006, Member States may specify the conditions of responsibility and decide in which cases the original producer is to retain responsibility for the whole treatment chain or in which cases the responsibility of the producer and the holder can be shared or delegated among the actors of the treatment chain."

Article 17 also contains some key obligatory language relating to hazardous waste and the producer's responsibility:

Member States shall take the necessary action to ensure that the production, collection and transportation of hazardous waste, as well as its storage and treatment, are carried out in conditions providing protection for the environment and human health in order to meet the provisions of Article 13, including action to ensure traceability from production to final destination and control of hazardous waste in order to meet the requirements of Articles 35 and 36.

While stopping short of mandating that Member States provide for strict extended producer responsibility in their national laws, the Directive sets out a clear policy to encourage this result. The practical implication will be that national governments in the EU will be revisiting the issue of waste generator liability in their national schemes in the near future.

Building on the Legal Precedents

Starting in Sweden and prominent in Germany and other countries now, the concept of "Extended Producer Responsibility" should not be confused with strict liability for waste. "EPR" is a concept that product design and handling should reflect environmental values from start to finish. While this may affect wastes, as in the "end-of-life" vehicle rules or the electrical equipment disposal and recycling rules, this has traditionally only been done product by product.

"Extended producer responsibility aims at dealing with waste problems at an early stage in the production process, i.e. when designing a product, selecting materials and manufacturing the goods. This principle has broken the monopoly of municipal authorities on waste management and has instead made producers fully responsible for the management of waste emanating from their products." Mikaela Hansel, "Extended Producer Responsibility in Swedish Waste Management Law" Max Planck Institute (2007).

While the old Framework Directive provided some nexus for producer liability for waste,[i] it took the decision of the European Court of Justice to really open up the issue in Europe. The new Framework Directive obligations come in the context on some expansive rulings by the European Court of Justice on what the "waste holder" definition means under the old Directive, applying it and subsequent liability to a producer who was not longer in possession of the product or its wastes. See Van de Walle & Others v Texaco Belgium SA, (ECJ Case No C-1/03, Sept. 7, 2004).The Van De Walle case involved a major oil company that delivered gasoline products to tanks at a station which it owned and leased to a third-party (who had the responsibility under the lease to maintain the tanks). When the tanks leaked and contaminate the underlying soil, the Court ruled that the oil company could be liable as a "waste holder" – even though it sold and deliver the material as a product, which only became a waste by leaking from the tanks maintained by a third-party. See also Total Oil.

Van de Walle is a product liability case in a many ways as one of the Belgian lawyers involved pointed out to me. When the product becomes "discarded" it becomes a waste. The Belgian prosecutors attempted to create an "extended produced responsibility" for the product turned to waste. The ECJ agreed and created a legal fiction that the producer of the product became a "waste holder" even though it lacked physical possession. Widely criticized by the private sector legal community, the case really set the stage for the new WLD, which takes the concept and memorializes it into European law.

The issue in Van de Walle, in part, focused on the foreseeability of the result and the duty of the producer to take precautions. In the case of waste disposal, there is far less of a jump in foreseeability and the logic will clearly create "waste holder" status under the reasoning used by the Court.[ii] It is clear under several national court decisions in the EU that transfer of the waste by the original producer will not effectuate a transfer of liability where subsequent problems arise.[iii]

Unlike the more ambitious goal of changing product design to anticipate environmental concerns, simply making the waste producer pay for the occasional improper disposal or handling of his waste seems to be fairly well-ingrained in European law.[iv] In this vein, the new WFD does not depart in its preference for waste producer liability from the established law in most Member States.

The Distinction Between New WLD Producer Responsibility and Categorical Directives

The concept of "extended producer responsibility" principally focused on the design of environmentally-friendly products and the recovery or reuse of those products at the end of their normal life cycle. This was memorialized in European law in a series of categorical directives about packaging, waste oil, "end-of-life" vehicles and electrical products.

The new "extended producer responsibility" fashioned in the revised Waste Framework Directive, derived in part from the Van de Walle case, contains a completely different focus, directed mainly at the waste produced in manufacturing the products as well as the products themselves as waste. In fact, the existing categorical EPR directives exclude production waste which is the most environmental significant issue. The Packaging Directive definition – "'packaging waste` shall mean any packaging or packaging material covered by the definition of waste in Directive 75/442/EEC, excluding production residues;" Article 3(b)(2). The "End-of-Life Vehicles" Directive only applies to the vehicles themselves, not production waste from their manufacture. The Battery Directive similarly is only focused on the disposal of the batteries themselves, not their production waste. Article 7 summarizes the objectives as "necessary measures to maximise the separate collection of waste batteries and accumulators and to minimise the disposal of batteries and accumulators as mixed municipal waste in order to achieve a high level of recycling for all waste batteries and accumulators." The Waste Oil Directive 75/439/EEC is also limited to the discarded product, not its production byproducts. Although the definition there is more inclusive, "the term "waste oils" shall be taken to mean any semi-liquid or liquid used product totally or partially consisting … of mineral or synthetic oil, including the oily residues from tanks, oil-water mixtures and emulsions." Article 1, (emphasis added).

While there is some almost existential "boost" from this which may provide some environmental aesthetics, the categorical EPR rules do not seriously address the major causes of environmental contamination from waste disposal. The European Environmental Agency has reported the sources of contamination by industry and by country. See Table 1.

It is hard to see how the existing categorical EPR rules are addressing these most common contaminated sites. For example, while electronic industry sources are a factor in environmental contamination in a few countries, especially Belgium, it is certainly not old TVs and computers that are the cause. EPR rules do not affect process wastes, such as solvents used in the production of circuit boards, which are the perennial problem in the electronics industry. The causes of serious contami-nation, as set out in Table 1, are largely not covered by the EU categorical directives on producer responsibility.

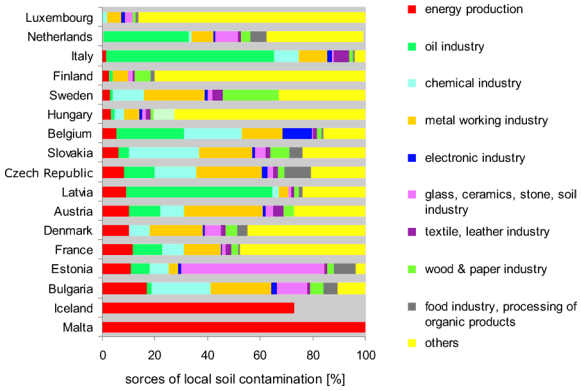

TABLE 1 (SOURCE: EUROPEAN ENVIRONMENTAL AGENCY)

On the other hand, issues related to process waste handling and treatment are generally addressed in the EU through the Integrated Pollution Prevention and Control permit program, which has also been the basis for enforcing waste producer liability for off-site disposal problems.[v] The IPPC guidance documents define "Best Available Techniques" and often deal with waste generation, minimization, and handling. They can form a much more detailed set of waste disposal requirements that the generally applicable national waste laws. See industry-by-industry IPPC guidance documents. Any corporate waste stewardship program should start with the relevant industry guidance document ("BREF"). The lofty sounding "Extended Producer Responsibility" directives and laws only occasionally address waste disposal and generally only when the product itself is discarded, not the process waste from its production.

The revised Waste Framework Directive, however, significantly shifts this paradigm. EPR under the WFD means liability for improper waste disposal as a result of the production of products, but not limited to discarded products. This is a far more financially important concept for most companies. Per capita clean-up expenditures in several European countries are already comparable to historical US levels[vi] and the number of sites that will need to be addressed is expected to burgeon in the future.[vii] AS EU law evolves to create more accountability for "downstream" activities, the financial consequences will become increasingly significant.

Implications on National Law in Europe

Some Member States have previously allowed for a transfer of liability in some circumstances,[viii] the EU is now clearly signaling that, while this may remain permissible, it must be specifically authorized and should not impair the "polluter pays" principle. Several jurisdictions, like Ireland and Denmark, have allowed the transfer of liability to occur when the waste is contracted to a licensed third-party for treatment or disposal. Both national governments, backed by their courts, have, however, limited the effectiveness of the liability transfer to the licensed handling of the waste, claiming that unauthorized disposal still remained the responsibility of the waste producer. This revised language in the Framework Directive is likely to fuel more regulatory and judicial efforts to retain waste producer liability, especially in instances where the third-party waste management company mishandled the waste and created a problem.

Implications for Waste Generators

The obligations in the revised Directive to assure maximum recycling of end-products fall upon the waste producers. See Article 8. So this obligation itself will tend to make delegation of waste management responsibility even more difficult. In other European jurisdictions with strict liability such as France, Italy, and Belgium, the added requirements of the revised Directive will apparently be additional downstream problems for waste producers. IPPC permit holders already have a generic obligation to assure safe waste disposal via Article 3(1)(c)("… where waste is produced, it is recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment;") which has been used in enforcement actions where third-party contractors mishandled the wastes. In other cases arising under the EU Environmental Liability Directive, an "operator" of a facility is deemed to be strictly liable for contamination that means the definitions of damage under that Directive, involving waste producers.[ix]

The revised Waste Framework Directive must be implemented by Member State legislation. While most Member States already have national laws that effectively make waste producers liable for improper disposal by third-party contractors, it is clear that the narrow exceptions to this rule in some jurisdictions will be under increasing pressure. Already pushed by the IPPC Directive and the Environmental Liability Directive, as well as expansive rulings by the ECJ under the Framework Directive, producer responsibility for waste disposal will inevitably be expanded in scope and application by the new Directive provisions. New legislation is required to implement the new Directive's requirements, especially the recycling and recovery obligations, so that every EU Member State will be looking at these issues in the coming months.

II. CONCLUSION

Waste producers will be increasingly required to account for their ultimate wastes' safe disposition. A critical part of corporate sustainability policy is providing for a strong corporate system of waste stewardship. Audits or reviews of third-party facilities handling a company's waste are increasingly commonplace in Europe. Some organizations, such as CHWMEG, provide a established procedure for the sharing of the cost of such a program and establishment of highly-trained teams of reviewers. For example, CHWMEG facility reviews now number in the thousands and over 200 members world-wide provide a basis for cost-sharing of the effort. Collective reports, like these, can also provide the information needed to fit into a specific individual corporate EHS format already in use.

Typical unregulated, mixed use dump site (US EPA 2001)

The multiple sources of potentially liability along with a strong corporate policy on sustainability mandate that companies be responsible "stewards" of their own wastes, whether handled themselves or by others. Waste facility audits offer a proven procedure to help prevent these problems.

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[10] DEFRA, WASTE MANAGEMENT: THE DUTY OF CARE, p. 22.

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FOOTNOTES

[i] The previous Waste Framework Directive on its face provides in Article 15: "In accordance with the 'polluter pays' principle, the cost of disposing of waste must be borne by: the holder who has waste handled by a waste collector or by an undertaking as referred to in Article 9, and/or the previous holders or the producer of the product from which the waste came." [original 75/442/EC] (emphasis added).

[ii] A "waste holder" is defined in the new Directive as "the waste producer or the natural or legal person who is in possession of the waste." Article 5(3). Thus, a waste producer will forever, apparently, be a holder even after physical transfer. See Van de Walle, supra.

[iii] Denmark normally follows a rule that allowed transfer of waste liability to a licensed third-party. But when the waste is not handled consistent with the license, Danish courts have imposed liability back on the producer: *"A producer of hazardous waste may be held liable for unauthorised disposal of waste by a transporter to whom the producer passed on the waste. A company, Horn Belysning, was convinced by a waste transporter that it had an arrangement with a licensed waste undertaker. The transporter dumped the waste illegally and was prosecuted. The court found Horn Belysning liable for clean-up costs and disposal expenses holding that it had the power to ensure the waste reached an authorised undertaker and could not escape liability by using a waste transporter (re. Horn Belysning, unpublished, Western High Court, 6 division 10th June 1993)(emphasis added).*"

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[iv] "…the arguments for including waste producers (they control the nature and quantity of waste produced, etc) remain attractive in several jurisdictions. Improper consignment, in the form of a failure to disclose or other misrepresentation of the nature of wastes, opens a waste producer to fault liability in most jurisdictions – including, in some cases, criminal sanctions." Clarke, "Update Comparative Legal Study," European Commission Study on Environmental Liability (European Commission 2001). French law has been used to reach waste producers under both the Waste Law (strict liability) and the general civil code on actions for negligence. See Frédéric Bourgoin, " Soil Protection in French Environmental Law," Journal for European Environmental & Planning Law, Vol 3 (2006), p.204. Italian law has also been moving toward strict liability: "In a recent case before the Supreme Court (September 1, 1995) it was held that the producer of toxic waste is liable for environmental damage when the related activity of storage and disposal is delegated to third parties; in fact anyone who is involved in the waste production and disposal cycle is jointly and severally liable." McKenna, supra, p. 196.

[v] In the Wyeth Medica litigation in Ireland, Irish prosecutors are relying upon the "integrated permit law" that provided that this permit should also be issued: *"...having regard to Part III of the Act of 1996, production of waste in the carrying on of the activity will be prevented or minimised or, where waste is produced, it will be recovered or, where that is not technically or economically possible, disposed of in a manner which will prevent or minimise any impact on the environment...."* Irish Protection of the Environment Act of 2003, amending 1992 law, Part IV, Art. 83(5). Permit writers in every EU Member State are referred to detailed guidance documents ("BREF"s) which contain industry-specific and process-specific "best practices" which may cover waste handling in some industries and can be incorporated into the final permits. Moreover, broad language in IPC statutes creating a general duty to make waste disposal safe may also be used to support waste producer liability claims, as occurred in the Wyeth matter. See Lindstrom et al. "Waste-Related Conditions in Environmental Permits," Finnish Environmental Institute 2005, p. 37 ["In most countries … the requirement for waste prevention , recovery and disposal is incorporated into the permit as a binding permit condition."].

[vi] European Environmental Agency (2006)(several EU Members have per capita cleanup levels equivalent to or greater than the US) See Congressional Research Service (2004)(reporting year 2000 costs).

[vii] European Environmental Agency (2006)(noting that 80 sites have been reported fully remediated and over 1,800 other sites have been identified for potential remediation).

[viii] The UK is the most lenient jurisdiction in its rules, but it still requires a duty of care by the waste producer that includes a mandatory facility audit of third-parties where the transporter is not the same entity as the ultimate disposal or treatment facility. UK DEFRA requires such audits if producer has separate contracts with the waste transport and disposer. Otherwise, they note that "undertaking such an audit and subsequent periodic site visits would be a prudent means of protecting his position by being able to demonstrate the steps he had taken to prevent illegal treatment of his waste." DEFRA, Duty of Care Manual, p. 22. *See e.g.* Lawrence & Lee, "Talking 'bout my Generation: The Remediation Liability of Waste Producers," 8 ENVIRONMENTAL LAW REVIEW 93(2006) (questioning the notion that UK law exempts producers). *See* DEFRA "Duty of Care" manual. The 1991 regulations almost amount to strict liability, in effect: "The duty requires such persons to ensure that there is no unauthorised or harmful deposit, treatment or disposal of the waste, to prevent the escape of the waste from their

control or that of any other person…." (emphasis added). DEFRA contends: "It is not possible to draw a line at the gate of producers' premises and say that their responsibility for waste ends there. A producer is responsible according to what he knows or should have foreseen." Id.

[ix] Par. 22, Environmental Liability Directive, 2004/35/EC (specifically referring to producers of products as liable for subsequent waste problems).

Sustainability in purchasing

Gyöngyi Vörösmarty, Tünde Tátrai, and Imre Dobos
Corvinus University of Budapest, Fővám tér 8, 1093 Budapest, Hungary
E-mail: gyongyi.vorosmarty@uni-corvinus.hu

Abstract: **Sustainability issues in purchasing are getting more and more attention. Literature is rapidly growing, as several research programs were initiated to investigate the topic. In this study we are going to present the results of a research project which aims to reveal and structure the motivating forces leading companies to make efforts for sustainability and means applied to attain achievements at some fields of sustainability.**

Results presented in the literature are scattered in terms of the fields of sustainability: most of the studies focus only on green or SCR issues and there is a lack of explorative models. So some theory development was done to create a framework in which it is possible to describe the applied sustainability means and the motivating force behind.

Our research project was carried out as part of a large scale research project entitled "In Global Competition".

I. INTRODUCTION

Literature on sustainability is rapidly growing, since widespread research activities have been carried out in recent years to investigate the management practices and to build models to structure the acquired knowledge. Our research focuses on a specific field of management; it will outline sustainability issues in purchasing and supply chain management. Our paper will point out that companies are customers as well, but the way they carry out their buying activity is quite different from people's shopping habits. In an economy the purchasing volume of the largest companies represent a substantial buying power, which is concentrated in much fewer hands than in customer markets. As a consequence a relatively small number of companies would be capable of motivating wide supply base and that could promote the spread of sustainable practices. The aim of this paper is to investigate

- what motivates purchasing to be more sustainable and
- how motivation factors relate to applied sustainability means.

Our paper will be organised as follows. The literature review is followed by a part which identifies and groups drivers and means of sustainable purchasing management; it also suggests a research framework. The methodology of the study is then presented. The next section outlines the findings of the study. Finally conclusions are drawn, including limitation of the research and future research directions.

II. UNDERSTANDINGS OF SUSTAINABEL PURCHASING IN LITERTURE

Purchasing has increasingly assumed a pivotal strategic role, which been subjected to theoretical end empirical scrutiny. [1] [2] However until recently most of this knowledge is mainly assigned to value for money factors such as price, cost, quality performance and other issues in procurement decision making which have historically been regarded as contributing directly to profitability. As sustainability considerations and awareness are becoming widespread, there is an increasing need to find ways of managing the much widened range of scope and decision factors.

Much research work has been published on sustainability issues in purchasing. US, and European articles as well could be found in this topic. Despite a lot of research projects were initiated at this field, most of them focus on a singular aspect of the topic and the concept of sustainable purchasing has many understandings.

Sustainable purchasing integrates long term economic, environmental and social issues. So it is part of the sustainability concept that purchasing should support the steady growth, and the sustainable development of the firm. In this understanding the role of purchasing is twofold: to insure reliable supply of required goods and services in the short and long run as well and operate in an efficient manner. [3] There is a group of authors, whose work is related to another element of the sustainability concept, they are considering environmental issues. Their investigation cover topics like green purchasing strategy (e.g. [4], [5]) or how to make purchasing tools greener (e.g. [6], [7], [8]). The third understanding in the literature highlights social responsibility issues in purchasing (e.g. [9], [10], [11], [12], [13]). The above mentioned literature in content closely related to the general literature on sustainability, however as a consequence of focusing on a single element is a bit scattered, the results are difficult to compare.

Our concept was to build our investigation on a comprehensive approach, and try to cover a wider understanding connecting the three elements (long term development and competitiveness, environmental concerns and social aspects) together. The following literature review considers means of sustainable purchasing first and than motivations to sustainable management. The research framework was prepared based upon these results.

III. MEANS OF SUSTAINABLE PURCHASING, LITERATURE REVIEW AND THEORY BUILDING

Our broad understanding of sustainable purchasing covers a wide range of activities and knowledge within organisations. As purchasing and supply management literature rarely connects the 3 elements of our definition of sustainable purchasing the description of means are scattered as well.

A. Long term development and competitiveness

There is a wide debate in literature on the growing recognition of the purchasing function. The increased focus on the issue of how purchasing adds strategic value and contributes to corporate success resulted substantial number of publications. A wide-ranging review of documented sources were undertaken by Zheng et al [14] leading to the identification of 42 core studies on the topic. Most of these 42 studies investigate the issue of purchasing's strategic relevance, although only a few addresses directly the issue of purchasing's role in promoting long term competitiveness of an organisation. As a consequence the role of strategic purchasing is well documented: it is to build cross-functional, inter-organisational relationships. As Chen et al [15] put it in their research model, strategic purchasing can engender competitive advantage by enabling firms to (a) foster close working relationships with a limited number of suppliers; (c) promote open communication among supply-chain partners; and (c) develop long term strategic relationship orientation to achieve mutual gains.

B. Green purchasing

In the last few decades green movements, institutions and government regulations (and support) have made companies to improve their environmental performance. To respond to this growing concern for green issues, firms have carried out a great number of environmental programs ranging from reducing air emission to the introduction of eco-auditing frameworks.

The increased responsibilities of purchasing in this context are well-documented in literature as a number of investigations have been carried out with the aim of obtaining a picture of green purchasing strategies. [16], [17], connecting corporate competiveness of the firm with green purchasing activities [18], [19] or preparing cross-national comparison [20], [21]. The results published in these articles are based on empirical investigation, which requires the measurement and description of green purchasing. Min, Galle [16] provides the most comprehensive model, in which they developed a classification of green purchasing activities: source reduction (recycling, reuse, source changes and control) and waste elimination (biodegrading, non-toxic incineration and scrapping and dumping). However this model does not follows the latest development of the purchasing and supply profession (e.g. supplier development).

In developing a research framework we propose that the role of purchasing in environmental context is threefold:

Firstly as purchasing and supply management is responsible for obtaining a wider range of products and services purchasing is involved as a contributor to environmental projects and apply purchasing tools (specification preparation, supplier evaluation, etc.) accordingly.

Second purchasing is recognised as a process itself, which is supposed to have green attributes.

Third purchasing –as a boundary spanning function- role in communication with the potential supply base is highlighted.

C. Social Responsibility in purchasing and supply management

Purchasing managers span the boundary between the firm's internal functions and its external stakeholders, including suppliers and third parties. So purchasing is advantageously positioned to affect firms' involvement in socially responsive activities. Literature in the field of purchasing and supply management has begun to investigate issues related to social responsibility. However, only a few of these investigations is based on a comprehensive understanding of PSR (Purchasing Social Responsibility), most of them focuses on a single element (e.g. ethical issues in purchasing).

Boyd et al [22] lists 3 elements: social labels, socially responsible investments and codes of conduts. Several further research (e.g. [23] were based upon Carter and Jennings [24] model, which is based upon empirical investigations among US organisations, identified 6 categories as environmental management, safety, diversity, human rights, ethics, community and philanthropy activities. This model of Carter and Jennings is comprehensive and it was internationally tested to be an appropriate base of theoretical and empirical base of investigation.

D. A research framework for identifying the applied means of sustainable purchasing

As we have seen literature on the content of sustainable purchasing is quite complex. In case of economic development and PSR it was easy to find appropriate approaches and classifications. However the case of green purchasing required some theory building, since the existing models are not supporting measurement of corporate involvement in green purchasing activities.

IV. MOTIVATION FOR SUSTAINABLE PURCHASING, LITERATURE REVIEW AND THEORY BUILDING

The question of why organisations might choose to adopt socially responsible or green practices has become an increasingly important topic in research papers. As in case of fields of sustainable purchasing our research aim required a structured model of motivations as well.

A. Literature on motivations for sustainable procurement

A range of drivers and barriers is identified in the literature. However the investigations have different focus (as it was mentioned the studies are about green purchasing or CSR in purchasing, and just a few speaks about sustainability issues in a comprehensive way), the identified elements are very similar. A significant body of research indicates that legislation and public policy is a major motivation for companies' sustainability efforts. (E.g. [25], [26], [27]). Customer expectations, fierce competition and other market related effects are also found to be important to motivate sustainability. (E.g. [28]). High importance is addressed to cooperation with stakeholders and to compliance with their expectations. (E.g. [29], [30]). It is also highlighted that the role of the individuals might be of importance. (E.g. [12])

In addressing the question of motivations, researchers have put forward a variety of models and concepts on how to structure the motivating forces. Walker et. al [31] perform a large-scale literature review and based on the results they identify the drivers of green supply chain management according to their source as internal (organisation related) drivers and external drivers (regulation, customers, competitors, society and suppliers). The model is validated by case studies from public and private sector to introduce a model to structure driving forces and barriers.

Another study aiming to provide a structured answer to the question of why organisations might choose socially responsible practices was prepared by Worthington et al. [32]. Based on information gathered from literature and case studies of US and UK firms they analysed what drives the sample organisations to engage in developing supplier diversity initiatives. The research framework of this investigation was also based upon literature results. They used the general (not specifically purchasing) literature of sustainability to build their model. They identified four influencing factors: legislation/public policy, economic opportunities, stakeholder expectations and ethical influences.

Both of these models of influencing forces are comprehensive, relevant and provide a logical structure of identified factors. However both of them were prepared to describe organisations' practice in a structured way and to be able to identify similarities and differences of samples (private and public sector and UK and US firms). Unfortunately literature hardly provides such a model which helps to explain how the motivation forces drive the actions of purchasing people to develop and use sustainable means and solutions. To investigate this relationship such a model is required, which provides a good ground to investigate the motivation forces.

B. A research model for motivations

To accomplish our aim of investigating the relationship between sustainability means and motivations, we needed a structured model of motivations. We identified 3 groups of motivating forces: the avoidance of negative effects, compliance to expectations, and achievement of positive goals.

Avoidance of negative effects might motivate procurement to act is a "sustainable manner" in several cases. Government legislation might have such elements which are not considered properly, than penalty is to be paid. Negative publicity resulting in loss of sales is an example too. In this cases aim is to avoid somehow the stakeholders' negative reaction. These motivations have the effect that companies act only if they feel endangered, while the means to avoid these negative effects is most of the cases not unambiguous.

Compliance to expectations means that there was an initiative to the purchasing function (or to the organisation) and they are supposed to satisfy it. Here the means (what to do) is given. It might be an initiative of the owners (develop a code of conduct). It might stem from competitors (e.g. each of them has already an ISO 14000 certification).

Positive achievements means that acts (or form of activities) are done as sustainable activities, but companies and its' stakeholders realise positive benefits. This positive benefit is often linked to the financial performance of the firms as well. (e.g. good PR in context of growing sales.)

Purchasing and supply function faces all three of these motivating forces. But way they motivate managers is significantly different:

In cases of avoidance of negative effect, managers will only do something if they feel the danger. It might provoke creative solutions, but it is not likely that it will create more enthusiasm than it is required to avoid the negative effect.

The compliance to expectations is a bit similar, just the solution is more or less given. It does not require further actions.

Positive motivations are those which indicate creative solutions and long term commitment to achievements.

These motivations are present at organisations at the same time. As we have seen they have different effect.

V. RESEARCH METHODS

In an effort to shed light on the relationship of motivation and means of sustainability specified earlier, an explorative study was conducted based on interviews from ten different organizations. Out of these ten organisations two were public and eight were private organisations. The private organisations are owned by multinational firms. Company names are anonym to encourage openness. All organisations are operating in Hungary.

The interview protocol was developed on the basis of the literature review and research framework presented above. Semi-structured interviews were conducted with at least one manager at each organisation. Respondent were senior purchasing managers. Secondary data were collected such as environmental policy, code of conducts, etc.

The interview format was the following:

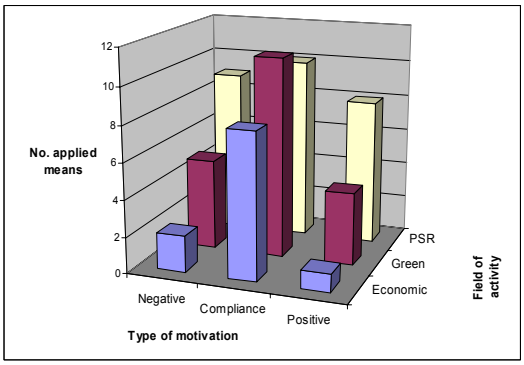
- Organisational background
- Understanding of sustainability
- Objectives and responsibilities of the purchasing organisation,
- Green purchasing
- Social responsibility in purchasing (community activities, safety, diversity, human rights, ethics).

After completing the interviews two experts validated the motivation aspects of the applied means.

VI. CASE RESULTS

As our aim was to investigate the motivating forces of sustainable purchasing, the applied means and the correlation between these two aspects, we used the above described research framework, to describe the practice of the interviewed organisations and reveal the structure of relations. The results of the interviews are indicated in Figure 1.

FIGURE 1: ACTIVITIES ACCORDING TO THE TYPE OF MOTIVATION.



VII. CONCLUSION AND IMPLICATIONS FOR FURTHER REASEACH

The above described results have shown that the interviewed organisations have a number of initiatives (means). The motivational background provided explanation to the frequency of the use of certain mains. This provides a support for the applicability of the developed research framework.

Summing up the results of the interviews, the following conclusions can be drawn:

1. The overwhelming proportion of the cases the motivating force fall into the category of avoiding negative effects or compliance to expectations. This explains why companies have a few initiatives, but do not have more.
2. Sustainable purchasing often does not have a PR advantage. Organisations and their purchasing consider conventional competitive priorities first; as a consequence companies did not even have data on disadvantaged or minority suppliers.
3. The most colourful activities were indicated at social responsibility. This was partly due to the fact that it coves a lot of fields. However the role of positive motivations (here the role of the purchasing staffs' personal motivation) was here the most important.
4. Local patterns are missing and as a consequence managers apply international patterns, which in turn cover global challenges (child labour), but do not deal with local problems.

Some implications for further research have emerged as well:

1. It would be of practical and theoretical interest to develop local patterns.
2. Industry background apparently influences sustainability practice, which would be worth investigating.
3. Public and private organisations have a different approach. As this is affected by government legislation international comparison could lead to conclusion.

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CSR and The Strategic Management of Companies (or, In defence of CSR) – A discussion Paper

S. Milton
Department of Environmental Economics and Technology, Corvinus University of Budapest, Fovam Ter, 8., 1093, Hungary
E-mail: simon.milton@uni-corvinus.hu

***Abstract*: Recent years have witnessed the growth of CSR as a field of academic study. Company Strategic Management, however is a much more mature field of study. The trend for companies to increasingly acknowledge and partially adapt CSR practice at the strategic level shows how Strategic Management is, or be at least would like to be seen to be, more fully reconciled with ethical concerns of stakeholders, an idea which goes far beyond what is usually covered by the term 'business ethics'. The need for corporations to consider what appeared previously divergent fields of study is attendant with changes in what some people expect the role of business in society to be, and throws up challenges for companies to deal with and adapt to. This paper provides some examples of the integration of CSR practice, principles and philosophy with Strategic Management (SM). It is argued that the greater the fit between these two discourses, the greater the likelihood of ensuring sustainability in its fullest sense. Some drivers of this integration are listed, and the challenges of capturing or monetizing the benefits of a CSR approach considered. It is argued that mainstreaming of the concept and practices of CSR is probable, and the success of companies in taking on board CSR as a strategic driver will ensure they 'do well, by doing good'.**

***KEYWORDS*: CSR, Strategic Management, Strategy, Convergence, Consilience**

I. INTRODUCTION

CSR and the typically-stated goals of strategic management have often been perceived as being in opposition (the former being seen to be focused on maximization of economic value, the latter being a response by companies to expend capital to earn a 'social license to operate') but emerging literature suggests that integration of the theoretical concepts and practices of CSR and strategic management is occurring. According to Windsor, CSR is a 'theoretical synthesis of economics and ethics' [1], and to Vogel it is a 'market for virtue' [2]. These notions lend weight to the idea that, to borrow E.O. Wilson's vocabulary, 'consilience' between the fields of SM and CSR is occurring (assuming it is true that CSR is the face of sociological interests and SM largely involves a rational or planning approach – see following paragraphs). The suggestion that such consilience (an 'interlocking of causal explanation across disciplines' [3] is occurring may be found at both the business practitioner level and is now emerging in recent SM and CSR literature (see, for example, [4],[5]). It is also consistent with classic microeconomic theory which posits that demand for goods is in relation to supply. This thesis may apply not only to tangible goods, but also 'demands' in general; with business transactions increasingly brokered through electronic instruments or carried out according to structured (almost ritualistic) exchange routines, some of the 'human' or 'inter-personal' content of formerly more common face-to-face transaction is lost. As supply of such sociological vocabulary decreases and, in parallel, knowledge of environmental and social issues increases, demand rises in tandem and is reflected in calls for companies to integrate ethical and environment-related succour into their product (or service) offerings.

II. CSR AND STRATEGIC MANAGEMENT

According to the EC Green Paper on CSR, CSR is 'a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis' [6]. This (clearly stakeholder-focused) definition suggests a kind of 2-way dialogue between stakeholder and company; one which requires companies to pro-actively seek out the opinions of stakeholders and pre-emptively make efforts to embed and actualize such ethically-based concerns into tangible forms – for example by using the recently coined SA8000 standard for social accounting to ensure the elimination of the use of child labour in textile production though the supply chain, or the purchase of recycled paper for the printing of books (e.g. Harry Potter and the Deathly Hallows – for discussion see [7]). Those companies most able to make tangible the expressed ethical desires of stakeholders stand to gain a competitive advantage as the fit of their products will better match customer demand. CSR goes beyond what is termed 'business ethics' as – typically – such company ethics are expressed in codes of conduct and charters which make little impact on business decisions (admittedly, I have not seen studies comparing content of corporate ethical codes against actual business conduct). Multifarious definitions of CSR exist and continue to tax practitioners and theorists. It is clear that not only does CSR involve some actual expenditure of resources on the part of the company to capture the market for consumer preferences for goods or services perceived as being preferable for social or environmental reasons, but CSR practices are also being driven partly by employee and leadership desires to be 'doing well by doing good'. Although it would be easy to pigeonhole or simplify CSR as a minor part of sociological discourse (usually related to protest against corporations), the reality is more nuanced.

Strategic management has formerly been typified by words such as 'rational, top-down and linear'.

Strategic planning, meanwhile, usually consists of 'an analysis of the firm and its environment, the development of strategic goals and alternative strategies, the assessment, evaluation and selection of strategic alternatives and the implementation, evaluation and control of the strategies' [8]. (A good overview of Strategic Management theory may be found in Mintzberg et al. [9]). According to Freeman's "separation thesis" [10] "the discourse of business and the discourse of ethics can be separated so that statements like, "x is a business decision" have no moral content, and "x is a moral decision" have no business content. This reinforces the notion of ultimately rational (utility maximizing) value-free human behaviour. These theories underlie much of corporate strategic thinking, although in recent years, more process, practice, context and sociological factor-based thinking has come into play in strategy, along with recent literature on chaos and complexity theory.

CSR (the 'market for virtue'), which asks for the translation of ethics into tools (more stringently than corporate charters, credos and codes of conduct) may have the potential to bridge the separation thesis through a reconciliation of ethics and economics with benefits for both fields. According to Porter:

'we can see convergence between stakeholder management and CSR not only as managerial instruments, but also as vehicles for altruism and business ethics' [5].

Thus there may be fewer obstacles than imagined to using strategic planning and management to actualize the ethical demands of consumers - yet few rigorous strategic models for doing so are available to business practitioners, and CSR efforts, to some extent, remain in the PR or HR departments of companies and are typically carried out in a piecemeal fashion. In practice, if not in theory, the role of CSR in strategy-setting is largely unclarified.

III. CSR AND SM – CONVERGENCE IN PRACTICE

According to Porter and Kramer [11] 'proponents of CSR have used four arguments to make their case: moral obligation, sustainability, license to operate and reputation'. The problem is that these disparate drivers create 'a generic rational which is not tied to […] strategy and operations'. Yet a recent UNDP Accountability study across 8 countries of central-eastern Europe concluded that 63.2% of 288 large companies surveyed are either 'on the way' or display 'good practice' in CSR engagement in the realm of strategy [12]. Concomitant with this survey is a clear sign of demand for the strategic management of CSR activities and assets.

Accountability defines 6 areas in which CSR engagement may be displayed by companies: Strategy, Stakeholder Engagement, Governance, Performance Management, Public Disclosure and Assurance. It is not clear to me why (or if) the category of strategy necessarily excludes the involvement of the other categories (e.g. Stakeholder Engagement or Performance). For example, ways in which CSR and strategic management may be integrated include identifying the social development objectives of the company in the overall long term strategic planning and management framework. According to Katsoulakos [13], CRS strategy management involves four main activities:

1. CRS policies, strategies and performance/ risk indicators need to be developed as an integral part of the overall corporate strategy to reflect the requirements and priorities of the key stakeholders.

2. Strategies should clarify corporate responsibility positioning decisions in light of benchmarking information. Business strategy alignment should then be periodically validated;

3.Governance structures, transparency standards and controls should be reviewed and adjusted as necessary to support the agreed CRS policies and strategies which may take a number of iterations to reach proper alignment;

4. A CRS capability development programme should be specified to support the implementation of the strategies in the context of the specified governance design.

Another way to involve CSR in strategy is to treat stakeholders such as NGOs as strategic service providers (effectively making them strategic partners) in the delivery of the company's corporate social responsibility goals and objectives–thereby going far beyond simple ideas of philanthropy. Theoretically, the company could receive a return on investment through recouping costs based on the full activity-based cost of integrated corporate social responsibility accounting.

Improving performance (point 2) may also be a strategic objective and the emergence of compound guidelines for CSR (such as the newly minted ISO2600[20]CSR guideline) will increasingly play a role in business management which goes well beyond the application of codes of conduct, charters, the use of ISO 14001 or other health and safety and socially responsible investment indices. For example, voluntary compliance with the 100+ components of the ISO26000 standard – which covers all aspects of company operation from environment to investment and resources management - could become a strategic objective aimed at capturing competitive advantage. The use of the balanced scorecard approach is an example of performance-driven integration of CSR practice (tying values and measures to a Balanced Scorecard could be the way to make good intentions more profitable" [14]. Further ways in which CSR may be integrated into strategic management is during risk management and assessment procedures, marketing strategies (social innovation and 'green' marketing) and eco-efficiency initiatives.

ISO 26000 standard: http://isotc.iso.org/livelink/livelink/fetch/2000/2122/830949/3934883/3935096/home.html?nodeid=4451259&vernum=0

IV. CSR AND SM – CONVERGENCE IN THEORY

"CSR is now….embedded in the existing political and structural relationship between capital and Society"

Brooks, [4]

A key question is: To what extent are CSR decisions similar to or different from other decisions that companies take? Can a theory of CSR decision-making can be found that does not contradict the basic principles of the classical theory of the firm? A growing literature seeks to address these questions ([5], for CSR theory, [15]), and at first reading it would appear that pre-existing SM theory is capable of absorbing CSR.

Milton Friedman was one of the first people to publicly voice concern over CSR and suggested that the existence of CSR was a sign of an intra-company agency problem (agency theory could imply that CSR is a misuse of corporate resources that would be better spent on valued-added internal projects or returned to shareholders) while Freeman's inducement/contribution framework [10], presented a more positive view of CSR in the company from a strategic perspective.

If the firm accords CSR a strategic role then CSR is a key variable (usually a closeness of fit between the firm's CSR activity and its mission and objectives occurs when the firm's CSR activity is closely related to core business activity). When this so-called 'centrality' is high (asymmetry low), the principal-agent problem is weak (the company can monitor social activities related to its core competencies). But when centrality is low, agency costs increase and the tendency to outsource CSR is higher.

Research by Husted, Allen and Rivera [16] attempts to provide a framework based on 'governance' (the topic of Corporate Governance is covered well in Dignam and Lowry [17]. Governance concerns how companies deal with legal responsibilities and can stand as a foundation on which CSR and corporate sustainability practices may be built. The authors note that a firm may either "buy" CSR (primarily outsourcing to NGOs or philanthropy) or "make" CSR internally (in-house projects), or collaborate with other organizations in the development of CSR projects. Management objectives are to determine which response benefits the firm in form of return on investment and stakeholder satisfaction. A thought experiment by McWilliams and Siegel [18] was undertaken in which two companies produce identical products - except that one firm adds an additional 'social' attribute or feature to one product and keeps track of sales data. In this way, it is theoretically possible to conduct a cost/benefit analysis to determine the level of resources to devote to CSR activities (although such a purely rational way to evaluate the level of resources adequate for CSR purposes would appear to eliminate any ethical drivers for doing business from the company side). The extent to which CSR will be used to pursue strategic opportunities is a management –and governance - decision. Legitimacy theory (i.e. appeals founded on a 'justification' – or closely, related, social contract basis [19] may substitute for strategic concerns if such concerns are not strong enough. Legitimacy theory [from Stratling [20]), defines 4 four main strategies that firms can employ to generate legitimacy:

1) The firm can inform its public about changes in its performance and activities;

2) The firm can try to change the public's perception of the firm's behaviour without actually changing the behaviour;

3) The firm can try to deflect attention away from contentious issues by raising the profile of related activities;

4) The firm can try to change public's expectations about its performance.

If core competences and dynamic capabilities (from resource based theory- addressing how companies can perform activities within the value chain more efficiently by utilizing firm-specific resources which are valuable, rare, imperfectly imitable and non-substitutable, [21] involve firm-specific assets or resources that allow it to engage in activities that are related to its fundamental business, CSR activity is more likely to be highly central (the firm possesses the competences needed to undertake that activity) and the activity is less likely to be outsourced. When centrality is low, information asymmetry may be high so a third party (or philanthropic donation) is more likely to be deemed suitable to fill the perceived CSR needs of the company. If we define resources widely as being "anything tangible or intangible that would be both useful and available to an organisation in carrying out its value-creating activities -including products, processes, patents, *reputation, customer relations, human capital*, etc" [12], italics added) then it is clear how aspects of CSR may be considered resources (for example, environmental social responsibility may constitute such a resource or capability that can lead to sustained competitive advantage). Other responsibility related competencies and capabilities may include such things as accurate estimation of the social and environmental impact of company operations and potential for their development. While many companies may focus currently on the PR aspects of CSR (i.e. advertising) and (possibly) developing environmentally-friendly products, to gain a 'responsibility advantage' will mean developing the responsibility resource (developing superior responsibility performance to competitors) to maintain their competitive lead in this area (the responsibility and resource based view of strategy is covered by Litz [22] and Hillman [23].

Alternative approaches to addressing the question of CSR and strategic management integration focus on industrial organization/environmental theory [24]. Strategies for developing core competencies may be combined with networking and knowledge management strategies, and be predicated on the learning capability of the firm (learning curve).

Stakeholder theory - which emphases a wide set of social responsibilities for business reflecting the diversity and contractual nature of stakeholders involved in the firm-was established by Freeman in 1984 in his book 'Strategic management: A stakeholder approach'. Stakeholder (instrumental) driven strategy (which is perhaps the most common theoretical lens through which CSR is assessed) meanwhile may look to support or enhance advantage-creating (usually trust-based) resources such as employee motivation, customer loyalty, ability to influence regulation, or local license to operate. When CSR and strategic management are integrated, strategic and tactical decisions are automatically evaluated for impact on the firm's stakeholders. If stakeholders are neglected they may withdraw support for decisions, or even challenge the primacy of leading decision makers in the company (recall, for example, significant and almost successful public challenges to the Exxon board of directors in May 2008 from an investor base concerned about environmental impacts of Exxon operations). Stakeholder theory was further expanded to include the moral and ethical dimensions of CSR by Donaldson and Preston [25]. Stewardship theory meanwhile, (Donaldson and Davis [26]) is based on the theory that there must be moral drivers for managers to 'do the right thing', even when this affects financial performance. Institutional theory and classical economic theory may also be applied to CSR. Companies involved in transactions with stakeholders on the basis of trust and cooperation are more likely to be motivated to be ethical and honest because this is more likely to lead to repeat business, while institutional theory (concerning the role of institutions in shaping the consensus within a firm) may be used to examine how the environmentally-sustainable firm can emerge [27]. Strategic leadership theory, meanwhile, can be used to examine how (strategically-inclined) positive leadership tendencies can correlate with CSR efforts.

One subset of business networks deals with strategic alliances and refers to formal long-term, formal collaboration between organisations that offers actual or potential strategic advantages to the partners involved. The tendency for firms to engage in such (albeit usually temporary) alliances with non-governmental organisations (such as MacDonald's and the American Environmental Defence Fund's decade long collaboration) occur for reasons of knowledge exchange and legitimacy. If business networks can be said to represent company social capital, a networking approach has the potential to assist in the establishment of competence and governance-focused network relations. The knowledge view of the organisation focuses on knowledge resources as the key source of competitive advantage. Knowledge value at the firm level may be seen in the form of corporate responsibility training (sometimes as a part of a knowledge management strategy) but often as a distinct activity aimed at developing core competencies and benefiting the internal (and sometimes external – wider community) stakeholders of the company through professional development.

The corporate responsibility perspective covers many areas such as corporate governance; CSR (directly) and ideas of 'corporate sustainability and the 'triple bottom line' (although CSR may be more associated with ethical issues). Corporate Sustainability is a specific term usually associated with company involvement in and support for the principle of sustainable development (and inevitably the long term survival of the corporation).

CSR may also be used in the context of political strategies aimed at gaining advantage through regulatory barriers to imitation. The application of this principle is partly captured in the quote that "CSR is a barrier to trade"[21].

Table 1: Selected Theoretical Papers on CSR and Table 2: Strategic Theory and Value and CSR relationship show how elements of CSR may fit with pre-existing SM theory.

V. DRIVERS FOR CONVERGENCE OF SM AND CSR: IS SUSTAINABILITY REALLY THE STRATEGIC GOAL?

Vogel presents examples in a recent book [2] to indicate there is a clear business case for CSR. He writes that 'the emergence of 'companies with a conscience' is due to the current reconciliation of social values and business systems. He adds that CSR is not "a precondition for business success but a dimension of corporate strategy". Yet to many company strategists, the word 'sustainable' has become closely associated with 'competitive advantage'- and indeed 'sustainability' has come to be an important indictor of sound strategy-making (e.g. in references to 'the sustainable, long-term success of the company').

Critical is to differentiate between CSR (as a subset of the sustainability movement aimed at addressing challenges of longer-term, global, environmental stewardship, conservation and equity based on a global partnership for sustainable development) and notions of 'corporate responsibility and sustainability' which are primarily business management approaches aimed at maximising long-term shareholder value with some attention paid to providing value for other stakeholders. Yet there is no fundamental reason to believe that the strategic management of companies, sustainability and the use of CSR tools are irreconcilable goals.

From a sustainability perspective, it may be interesting to know what is driving the current uptake of CSR practices (i.e. a business management approach or a sustainability approach). CSR is potentially a strategic matter of great importance (and thus potential threat) in so far as it has the potential to change the frame of reference (organisational purpose or mission) of the company. Some proponents of CSR challenge the value-creation paradigms of the organisation on an equity basis (e.g. as evidenced in Bakan's film 'The

[21] Nelson Mandela

Corporation[22]', by critically asking "who stands to benefit from company activity?"). An ecocentric approach may question whether value is being created or destroyed by companies (e.g. by using non-renewable resources in the production of goods of dubious added value to consumers). Yet examples abound of corporations that have publicly committed themselves to taking CSR on board as part of their sustainability strategies. Often quoted drivers for the uptake of CSR as part of a wider corporate sustainability strategy usually include (modified from Katsoulakos, [6]):

- self regulation (codes of conduct, improvements in occupational health and safety, environmental protection and social and environmental reporting)
- alignment with national sustainability strategies
- Socially Responsible Investment (SRI) and corporate sustainability indexes.
- risk management
- satisfying consumer preference
- complying with goals and principles for responsible corporate behaviour (e.g. Global Compact)
- incorporation of stakeholder concerns.
- increasing eco-efficiency (decreasing resource costs)
- improvement in supply chain processes;
- developing human capital (by means of talent attraction and retention, motivation and participation of employees)
- opening market opportunities (social innovation and green products and services)
- reputation building or maintenance

Integrating CSR into strategy-making processes may be as simple as companies dealing with CSR in the same frame of reference as they do with other issues (e.g. decreasing resource costs by increasing eco-efficiency and advertising the benefits as being CSR-driven, or opening 'green' market opportunities). Yet the strong argument (from a sustainability perspective) that CSR should be considered a strategically important concept for organisations at the firm or organization level goes well beyond simple attempts to link financial performance to proxy measures (such as various indicators) of CSR [28]. In any case, many such studies have proven inconclusive - finding negative, positive and curvilinear relationships between financial performance and CSR [18].

A recent survey [29] of 111 Dutch companies attempted to measure managers' attitudes toward and motivation for implementing CSR activities by asking for level of agreement with the following statements:

> *'Our firms' own effort with respect to CSR will have a positive influence on our financial results in the long term' (to capture the strategic view of CSR), and…*
>
> *'To behave in a responsible way is a moral duty of businesses towards society' (to capture the moral view of CSR)*

Results from this survey were cross-checked against actual company efforts to implement CSR practices. Results showed that a majority of respondents had a positive view of CSR in both dimensions. Interestingly, while a weak correlation was found between the strategic view and actual CSR efforts, the strategic view generated active CSR policies with respect to consumer relations and employee relations. In relations with suppliers, competitors and society, and the use of instruments to integrate CSR in the organisation, a positive strategic view made only a very small difference with respect to actual CSR efforts. However, a positive moral view of CSR was more "strongly correlated with actual efforts" (related to CSR policies affecting relationships with employees, customers and the use of instruments to integrate CSR in the organisation). For other stakeholders the research found a small but insignificant correlation between the moral view on CSR and CSR performance. The authors conclude:

> "*The result that CSR implementation is more related to moral commitments than profit maximisation implies that one should be careful when emphasising the financial advantages of CSR"*

This finding is echoed in work by Stratling [20 whose empirically (company survey) based paper concludes:

> "*A surprisingly limited number of the companies in the sample take a very explicit strategic approach to CSR by stressing long-term shareholder value maximisation. The CSR policies therefore appear* ***not*** *to focus solely on a strategic stakeholder approach geared towards maximising shareholder value*"

A 2005 KPMG Survey of corporate responsibility[23] report also highlighted diverse motivation for corporate responsibility initiatives (a weighting of 74% economic and 53% ethical was discovered - although 'stated preference' type techniques are known to be problematic and often do not positively correlate to actions).

VI. DISCUSSION

If what is suggested by these limited surveys holds true in the wider environment (and there is as yet scant evidence to prove or disprove this hypothesis) and the ethical drive for implementing CSR influences behaviour at least as much as or even more than strategic concerns, obvious implications for cost-benefit approaches to implementing CSR practice are indicated (i.e. while costs of CSR-related activities to the company are already difficult to calculate in monetary terms – due to lack of clarity about motivation for such activities - benefits may prove

[22] www.thecorporation.com

[23] www.**kpmg**.com.au/Default.aspx?TabID=1278&**KPMG**ArticleItemID=1685

monetizable only with extreme difficulty if they include 'ethical' – feelgood - benefits). Companies may also benefit from acknowledging, studying and learning from the implications of a possible disconnect between corporate CSR-related action-taking and decision-making, and strategic planning.

From the microeconomic theory of the firm and the resource-based view of the company it is clear how CSR may provide strategic advantages through more efficient use of scarce resources (higher eco-efficiency with non-renewable resources, for example). It is possible to contend that some of the ethical dimensions of stakeholder demands are similarly driven. When a majority of everyday resource transactions (typically purchases) of much of the richer population of the globe are brokered through multi-national companies, stakeholders (as customers) are increasingly demanding transparency regarding the ethical behaviour of companies (which is obscured due to the long nature of modern supply-chains). If transparency in ethical issues can be considered a resource that is increasingly in demand in relation to corporate transactions, the analogy is also applicable. Surveys also indicate declining trust in global companies, in part due to recent corporate scandals. CSR may thus reflect in part an increasing demand for the scarce 'trust' resource. Due partly to the increasing availability of information (and speed of transmission) companies which attempt to manipulate this demand purely for the purposes of strategic advantage (e.g. through so-called 'Greenwashing') are liable to find the accruing benefits short-term. Yet, if a genuine supply of such hard-to-monetize resources increases, a long-term win-win result ensues.

Strategic management theory does not preclude integration of the environmental, social or economic dimensions of CSR practice, and at the business level it is clear that CSR practices are being increasingly adopted (admittedly, mainly by a small sector of larger multinational companies, at least in the formal sense). If calls for transparent and meaningful CSR leadership and practice increase, as they continue to do, it companies will be impelled to take into account these calls or risk losing competitive advantage. One challenge is to understand how companies can be motivated and lead to understand the potential benefits to be gained by CSR, and thus transform their 'responsive' CSR strategies into strategically-driven, pro-active CSR opportunities. In support of this thesis, a recent cost-benefit analysis (based on a 'standard microeconomic analysis of the level of social output that results') Husted and De Jesus Salazar [30] suggests that CSR when used strategically may benefit both society and firms (whereas when used 'altruistically – i.e. without regard to bottom line – or due to 'coerced egoism' – when compelled by regulation - less benefits accrue). More studies are needed.

VII. CONCLUSIONS

Evidence for the fuller integration of CSR and SM is visible in the realms of both practice and theory, and looks set to continue. Mainstreaming of the concept (strategically-speaking) is likely. Fuller consilience would help slow running up against resource limitations, data on which appears alarmingly and increasingly frequently.

Additionally, understanding what calls for CSR practice really represent could assist in taking into account the rights, desires and preferences of large segments of society. Asking is 'business' able to escape from profit-driven business-as-usual to fully reflect the range of values inherent in society, as reflected in the emergence of CSR?' is perhaps the wrong question to ask. The fact that many companies have already responded with their own brands of CSR shows that it is to some extent already embodied in the business model through the mechanisms of the firm and the laws of supply and demand. The demand for CSR to be integrated into company strategy is partly an expression of customer preference, and those companies that are best able to capture market preferences are likely to prosper. On a legitimacy, stakeholder (ethical) and resource basis companies will come under increasing pressure in the 21st Century to continue actualising demands for CSR into corporate tools. Demands for a 'restorative economy' defined by Hawkins [31] as:

"*rethinking the fundamental purpose of business and economy in order to "creat{e} a very different kind of economy, one that can restore ecosystems and protect the environment while bringing forth innovation, prosperity, meaningful work and true security"*

are likely to increase. By remaining informed and open to fuller consilience of SM and CSR and working towards the resolution of what seemed previously opposing systems of economy, ecology and ethics through the medium of social and natural sciences and strategic management through such forms of dialogue such as CSR, opportunity still remains to 'do good, by doing well'.

Author(s)	*Nature of theoretical perspective(s)*	*Key argument/result*
Friedman (1970)	Agency theory	CSR is indicative of self-serving behaviour on the part of managers, and thus, reduces shareholder wealth
Freeman (1984)	Stakeholder theory	Managers should tailor their policies to satisfy numerous constituents, not just shareholders. These stakeholders include workers, customers, suppliers, and community organizations
Donaldson and Davis (1991)	Stewardship theory	There is a moral imperative for managers to 'do the right thing', without regard to how such decisions affect firm performance
Donaldson and Preston (1995)	Stakeholder theory	Stressed the moral and ethical dimensions of stakeholder theory, as well as the business case for engaging in CSR
Jones (1995)	Stakeholder theory	Firms involved in repeated transactions with stakeholders on the basis of trust and cooperation have an incentive to be honest and ethical, since such behaviour is beneficial to the firm
Hart (1995)	Resource-based view of the firm	For certain companies, environmental social responsibility can constitute a resource or capability that leads to a sustained competitive advantage
Jennings and Zandbergen (1995)	Institutional theory	Institutions play an important role in shaping the consensus within a firm regarding the establishment of an 'ecologically sustainable' organization
Baron (2001)	Theory of the firm	The use of CSR to attract socially responsible consumers is referred to as strategic CSR, in the sense that firms provide a public good in conjunction with their marketing/business strategy
Feddersen and Gilligan (2001)	Theory of the firm	Activists and NGOs can play an important role in reducing information asymmetry with respect to CSR on the part of consumers
McWilliams and Siegel (2001)	Theory of the firm	Presents a supply/demand perspective on CSR, which implies that the firm's ideal level of CSR can be determined by cost-benefit analysis
McWilliams et al. (2002)	Resource-based view of the firm	CSR strategies, when supported by political strategies, can be used to create sustainable competitive advantage
Waldman et al. (2004)	Theory of the firm/strategic leadership theory	Certain aspects of CEO leadership can affect the propensity of firms to engage in CSR. Companies run by intellectually stimulating CEOs do more strategic CSR than comparable firms

TABLE I. SELECTED THEORETICAL PAPERS ON CSR (FROM MCWILLIAMS, [32]

THEORY	STRATEGIC ASPECT/VALUE	CSR RELATION
Industry Organisation	Market analysis	Industry level sustainability analysis
Environment based theories	Strategic positioning and value propositions	Fair globalisation
Resource Based View	Advantage-creating resources. Core competencies	Responsibility impact and improvement capabilities Responsibility competencies mainstreaming
Business Networking	Relation-specific assets Complementary assets Transactional cost minimisation	Sustainable development support networks
Learning perspective	Advantage-creating knowledge (intelligence, change management) Learning curve	Human capital/ Professional development Stakeholder training
Corporate Responsibility and Sustainability	(Self) Regulation SRI related strategies Green products strategies Responsibility positioning Transparency Risk management Brand and reputation	Ethics Accountability
Stakeholder oriented strategic management	Stakeholder instrumental value related strategies Social capital	Stakeholder intrinsic approaches

TABLE 2: STRATEGIC THEORY AND VALUE AND CSR RELATIONSHIP (MODIFIED AFTER KATSOULAKOS)

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Exploring Relations between the Human Scale of Values and the Economic Order

Baritz Sarolta Laura
Budapest Corvinus University, Department of Environmental Economics and Technology, Fővám tér 8., H-1093, Budapest, Hungary
E-mail: baritz.laura@gmail.com

***Abstract*: The paper examines the relationship between the main patterns of the human way of thinking and the economic system manifested in the role of the market and the profit, as well as their connection with human values. At the level of organisations it is surveyed in value driven SME's in Hungary, 2005, and at the level of individuals it is researched in Value Surveys, 2006.**

I. INTRODUCTION

This paper explores two main systems of the human way of thinking: 1. utilitarian ethics and 2. virtue ethics. HYPOTHESIS 1: there are two different economic systems being built on the two different human patterns of thinking mentioned above, where the main motivator of the economic activity, human *self-interest*, has substantially different meanings. The notion of economy will be narrowed to its two main characteristic components: the *market* and the *profit*.

HYPOTHESIS 2: in a utilitarian value system the *market* bears unlimited features, while the operation of the market with a virtue ethical background is constrained by the realm of human values and morals.

HYPOTHESIS 3: in an economic system with a utilitarian base the ultimate goal of an organization is *profit* maximization, while in an economic order, which is supported by a virtue-ethical way of thinking, the operational goal is not the profit maximization, but the fulfilment of the common good. The profit here is viewed as a tool for achieving the common good and other value driven goals.

HYPOTHESIS 4: in a system, where this latter logic prevails, *human values* play substantial role in the operation of an organization. They carry the character of operational goals rather than those of tools for the profit maximization. In the utilitarian economic system the case is just the opposite: profit is a goal, values, if any, are tools to its realisation.

HYPOTHESIS 5: the distinct features of self-interest, the differing importance of values and the difference in the role of profit (utility or usefulness) can be validated at *the level of individuals* as well.

VALIDATION: On the company level these Hypotheses are checked theoretically with the help of the scientific literature (Hypotheses 1-3), and by surveying 20 Christian small and medium size companies in Hungary in 2005 (Hypothesis 4). Hypothesis 5 was validated by a regression analysis of the variables of the European Social Survey (ESS) drawn in Hungary, 2006 together with Hungarostudy, 2006.

II. METHODOLOGY

1. Searching and analysing the scientific literature in the field of ethics, values, happiness, social capital, SME's, common good.
2. Deep interviews with the CEO's and employees of 20 Christian companies in Budapest and its neighbourhood. Sampling method: representative sampling by activity, size, turnover, headcount, organisational type, spirituality.
3. Regression analysis of the ESS 2006; defining the main interpretative (independent) components of the dependent (outcome) variable of 'happiness' and the validation of the results with their comparison of the corresponding outputs of Hunagrostudy 2006.

III. CONCEPT

HYPOTHESES 1: Self-interest

The Aristotelian – Thomistic virtue-ethics and the utilitarian ethics of John Stewart Mill, Jeremy Bentham, Adam Smith, etc. show two different anthropological paradigms regarding the scale of values and the goal setting of individuals. The meaning in the main elements of 'good', 'self', 'happiness' and 'virtues' diverge from each other in these two paradigms substantially. The value system of the virtue ethics considers the meaning of the 'good' objective, based on the principles of Natural Law, conceptualised by Thomas Aquinas in the 13th century. The 'good' correlates with the being, which is basically and essentially good. This paradigm seizes the notion of 'self' in its relations towards others, according to the philosophical school of personalism. Human beings strive for a fulfilment (perfection) by their nature, and their real needs involve the well being of other humans, as well. 'Happiness' – the Aristotelian 'eudaimonia', according to the Nikomakhean Ethics [Aristotle, 1987] – is described here as the ultimate goal of the human being, which can be reached by doing 'good' through a virtuous way of life, by promoting the

common good and by a contemplative spiritual life, which is the contemplation of the truth (according to Aristotle), or connection with God (according to Thomas Aquinas). All in all: the idiosyncratic goal of the human being is to strive for his/her own fulfilment (perfection) with the help of virtues, to labour for others, i.e. for the common good, and to live a so called spiritual life. According to Eric Fromm, this is the most rational way of self-love for a human being, that is, this is his/her true, objective self interest. [Fromm, 1993, 20]

In the other anthropological paradigm of utilitarianism the meaning of self interest turns out to be substantially different and also narrower. According to Eric Fromm it is not be determined upon human nature and real needs, but equals to a human selfishness, and therefore it becomes subjective, as it works on the basis of the 'utilitarian principle' described by John Stewart Mill [Mill, 1980]. The 'good' in this paradigm becomes subjective as well. It will also become utilitarian: good is, what brings profit to me; also hedonistic: good is what increases pleasure and enjoyment in me. The 'self' tends towards himself/herself instead of others, of the community and becomes determined by his/her possessions instead of his/her being. 'Happiness' is hedonistic, it is defined by the pleasant – unpleasant scale of 'good', and 'virtues' get another content than their original meaning, they become tools for pursuing profit and pleasure maximisation.

Matching the two systems, Thomas Aquinas gives an excellent orientation, where is the place of profit and pleasure, the two main goals of utilitarianism "…[a]s a means, by which something tends towards another, is called useful…Whereas the useful applies to such as have nothing desirable in themselves, but are desired only as helpful to something further, as the taking of bitter medicine, while the virtuous is predicated of such as are desirable themselves. .. Goodness …is predicated chiefly of the virtuous, than of the pleasant and lastly of the useful." [S.Th. I., q.5, a.6] This citation makes order among the goods: there are useful things – material goods, financial means, production lines, marketing strategy, etc., the so called 'fundamental goods' [Alford – Naughton, 2001] – which, as an instrument, promote the existence of other goods. These goods are not tools, but rather goals, and they carry value in themselves – trust, justice, fairness, solidarity, CSR, life, love, friendship, etc., the so called 'excellent goods' [Alford – Naughton, 2001]. Actually, they are the realm of values, where virtues find their own place, as well. The useful things (goods) serve the values. This way utilitarianism and profit pursuit are tamed to be able to fit in the meaning of usefulness (usefulness, instead of utility), profit is not a goal anymore in itself but it is a useful instrument to serve other goods, the values. Pleasure takes the second place after the virtue, playing a substantial role, but not the supreme role among the 'goods'.

If human thinking patterns involved the virtue-ethical scale of values, and the economic motivation was based on the objective self interest, the economic order would be different from that of experienced in the utilitarian paradigm. This will be introduced by surveying the role of the market and the profit in the two paradigm by reviewing the literature regarding the meaning of 'infinite values'.

HYPOTHESIS 2: The market

Lesourd, Jean Baptise Schilizzi Steven G.M. introduce the notion of 'infinite values', in the realm of which, the cost-benefit analyses would be impossible and which does not obey the laws of the market and the Pareto optimum formula. [Baritz, 2008] The existence of the infinite values is validated in the scientific literature as follows:

a.) the proved hypothesis of *happiness paradox* described by Easterlin, Kahneman, Bruni, etc. [Kahneman et al., 2006] shows, that human happiness increases with the growth of material income in direct proportionality to a certain point only, and than, with the increase of the income, the intensity of the human happiness decreases. Happiness shows direct proportionality with the existence of human relations, i.e. with the *'relational goods'* (Bruni)

b.) Polányi and Scitovsky introduce the notion of *'reciprocity'* (Polányi) and '*traditions, customs, family work and croft'*, where the value of the human work is not measured financially on the market, but it carries the character of a value, done for the others in reciprocity, or done for a value driven goal, free of charge. The value of *these "non market activities amounts for the half of the family income."* [Scitovsky, 1990]

c.) Daly and Cobb say, when we would think in the virtue ethical paradigm, a part of the problems of positive and negative externalities could be solved not only by internalization, but by good will as well. In connection with vaccination against polio they mention: *"We might hope that people would be glad of this external benefit to the neighbours, but economists assume that there will be a sufficient number of 'free riders'...To the extent that individuals' self-identity is constituted by relations of community, the free riding would be rare."* .[Daly,H.,E . – Cobb,J.,B., 1989, 53-54]

d.) From the above mentioned phenomena it seems, that in a virtue-ethical paradigm the market economy's coverage is not infinite, but it is constrained by the values, the value driven goals, and by moral considerations [Muzslay, 1995] Amartia Sen expresses it by a meaningful picture: *"The logic of the market mechanism is*

proportioned to the private goods (like apple and shirt), not to the public goods…" He says, public goods should be handled on the basis of values like fairness, solidarity, freedom. [Sen, 2003, 204]

e.) Since Aristotelian – Thomistic virtue-ethics serves as a basis for the Christian social teaching as well, the papal encyclical 'Centesimus annus' of Pope John Paul II underlines the thoughts described here. CA 40 says: *"There are goods which by their very nature cannot and must not be bought or sold…goods which by their nature are not and cannot be mere commodities."*

From the thoughts outlined above, we can conclude that the virtue ethical scale of values generates an economic order where market economy has constrains, and is valid in the realm of useful goods, which serve values and value driven goals. The infinite values do not belong to the realm of the goods that fit in the function and rules of the market. Similar phenomenon happens to the profit in this paradigm.

HYPOTHESIS 3: *The profit*

In the praxis we find different approaches defining the operational goal(s) of an enterprise. We can observe the range of companies from setting the pure utilitarian profit maximizing goal through defining ethically driven profit goals, up to the realization of pure value driven goals. If we draw a scale between the most outspoken utilitarian way of thinking and the pure virtue ethical paradigm, we can observe the substantially changing role of profit in the various accounts. The first accounts on the scale would follow Friedman's rule, claiming, that the moral obligation in the business life is the maximisation of the shareholders' value. Here the pure business goal is profit maximisation and the values, virtues are tools for it. [Fukuyama, 1997, Covey, 1989] The next group of accounts on the scale are Mintzberg's strategic management schools: in these modern enterprises cognitive, environmental, cultural, human values, group interest, trust, subsidiarity play substantial role in the companies' goal setting, but their ultimate goal remains within the utilitarian logic: expansion, steady growth, profit maximising. The turn in the position of the profit eventuates in the trade of the 'alternative capitalists' (like Ben and Jerry's, Dollar General, Tom's of Main, some accounts in the filed of environmental friendly management, the ethical companies), where their outspoken business goal is to achieve the common good (Tom Chappell) and in their management the 'profit is a tool, and not a goal' (Anita Roddick). [Pataki – Radácsi, 2000].The representatives of these firms follow communitarian ethics and values, like cooperation, empathy, environment, feminism. At the end of the scale there are the Christian companies, whose scale of values are based on the Aristotelian – Thomistic virtue ethics and who's ethical values are connected with the values of their faith. The operation of these companies is value driven, the thoughts of the Christian social teaching can be explored implicitly within them, and their ultimate goal of operation is the fulfilling of the common good. The very end of the scale is the group of enterprises of 'Economy of Communion', they involve the poor among their stakeholders and share their profit with them. This can be called the straight counterpart of the Friedmanian utilitarian firms, based on their radically different way of thinking. The Christian social teaching says about profit as follows. Centesimus annus, John Paul II, CA 40*: "In fact, the purpose of a business firm is not simply to make a profit, but is to be found in its very existence as a community of persons who in various ways are endeavouring to satisfy their basic needs, and who form a particular group at the service of the whole of society. Profit is a regulator of the life of a business, but it is not the only one; other human and moral factors must also be considered which, in the long term, are at least equally important for the life of a business."*

HYPOTHESIS 4: *The human values*

In this part we survey the characteristics of the value driven companies in details, where the spirituality of the accounts shows the features of the virtue-ethics. This part will confirm the theories outlined above, since it will present the results of a field work, the summary of having surveyed 20 SME's in Hungary, in Budapest and its neighbourhood in 2005. The aim of the research was to explore the management and spiritual components of a SME, which is to be said value driven. (They are the so called "entrepreneurs for something else", the "social entrepreneurs", "Christian entrepreneurs", "ethical companies", "environmental friendly companies", etc.) Out of this supply, the survey focused on the Christian companies, because their spirituality seemed to offer the cleanest approach to the value scale of the virtue-ethics. In its clean form one can observe the role of values and the hierarchy of useful goods and values, that is, the functioning of the fundamental goods and excellent goods [Alford – Naughton, 2001], in the range of these firms.

The representative sample selected by the help of the organisations, associations of SME's (ÉRME, KEVE, KG) looks like as follows:

Size	Headcount	Activity	Total
Micro	1-14	Doctoring, furniture, consulting	**6**
Small	15-60	Tourism, food, building industry, IT,	**9**

Size	Headcount	Activity	Total
		textile, office supplies, rehabilitation	
Medium	90-250	Publication, spare parts, air conditioning	**3**
Emplo-yees*	multi-nationals	Telecommuni-cation, IT	**2**

*They fulfil the role of *control variables,* the interviewees being employed in an environment with utilitarian features.

There were five main points in the deep interviews made with the CEO's:

1. Why is your company value driven? What are your motives?
2. Surveying Mission Statements. Do you consider your business activity as a calling?
3. About the human fulfilment within the company.
4. About the common good and income distribution.
5. About the course of business.

1. All managers marked the most important criteria of a value driven Christian enterprise the honesty, fairness, pure morality, leading a fair business and the predominance of the virtue ethical values within the enterprise. The values of faith are associated with the ethical values: like ideas of love, the rules of the Ten Commandment, morality, trustworthiness, persistence and long term thinking, the pursuit of the common good, good human relations within and out of the company. The scale of values of the CEO inspires the whole company. Discipline, professional skills are important, as well. Further important values mentioned by the interviewees: "not too long working hours, paying attention to the duties towards the family, environment consciousness, excellent quality, no use of obscene words, honest behaviour." The main motivation of SME's to operate their company is to produce special, unique products, in order to fill in the gaps and deficiencies of the market making use of the inflexibility of the large companies, and avoid keen competition from the side of the multinationals.

The most committed group of companies, the Economy of Communion (EC) lives out a specific spirituality, the 'culture of giving and sharing', and they declare, that the goal of the enterprise is love and sharing. "The centre of the economy is the person, its aim is the human fulfilment, therefore the integration of private life, the entrepreneur's life and the community life should be realized". Not only the profit, but the whole company is a tool for the human fulfilment. They consider the poor as their stakeholders, donating them from their profits in a regular, organised way. For instance the activity of one of them is rehabilitation: to get jobs for challenged.

According to the research, we can observe an important connection. The smaller the company is, the stronger its ability is to live the human wholeness, to realize values, and to fill in market deficiencies.

2. The mission statements express both professional and spiritual issues, they focus on fulfilling a professionally good work with human, ethical values. Some examples: "Giving high level knowledge, experience and values to people." "Giving healthy nutrition programmes in the interest of the common good." "To be competitive, successful and steady through honest work." "Harmonising business with public interests." "Profit orientation and Christian scale of values." "Improving quality of life in the interest of the common good." "Value driven, human centred, humanitarian service." Regarding the values in their enterprise the following definitions were formulated. "Catholic, ecumenical, trustworthiness, honesty, clever management, evangelical values, civil values, pragmatic values, human relations." Out of the interviewed twenty, fifteen CEO's considered their job as a calling (creation, development of abilities, fulfilment), which means they can integrate their value scale with their jobs and being successful in it. The two interviewed employees (control variables) employed at large utilitarian companies did not show the same picture. One of them did not like the job he was doing, so he could not hold it as a vocation, the other one complained of corruptive environment, stating that he cannot live according to his values at work. This shows, that, as a tendency, SME's with virtue-ethical background are more adequate for living out human wholeness, values.

3 .The survey about the human fulfilment resulted in a similar picture. Out of the twenty interviewees sixteen expressed somehow that for him work means human fulfilment, he can grow in his work. However, the employees were not questioned systematically, just randomly, we can presume, their attitude to work is not substantially different from that of the CEO's. Generally, the CEO's and employees questioned reported about good working atmosphere at their working place. The following statements about human wholeness were stated: "my work is creation, one can grow up in it, many possibilities to look for new solutions, it is pleasure, service, physical training, the whole person can be born, training of the willpower in good atmosphere." Those ones, who did not confirm their human fulfilment at their working place, complained of the routine work, in a larger company the distance from the colleagues was mentioned and corruption (by the control employee).

4. When speaking of the common good directly, it turned out that seventeen CEO's appointed it as the ultimate goal of their operation. Some meant under it 'charity', but fourteen consciously strive to

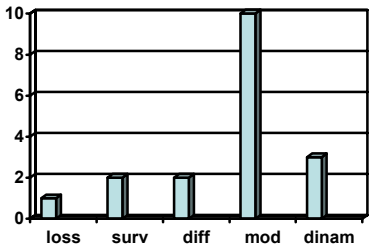
promote the good of the society with their products and activity. Some mentioned that his company fulfils a missionary task, with its service and working community. According to most of them" profit is a measure of value, the fruit of a good work, it is an essential condition attached to the Christian scale of values, it is a necessary tool". They agreed that the basic goal of production is not the profit maximisation but serving the good of the humans.

The value driven character of the twenty accounts could be observed by having checked their income distribution, the smaller the account was, the more equal its income sharing turned out to be. In the small companies the income disparity multiplier between the highest and lowest income was 2-4, while at the large ones it was 7-10. The most extreme case was 16. This shows that in their wage policy the value of justice and fairness guided the management.

5. Thinking over the information we have learned up to this point, the question must come up rightly, how these "idealistic" organizations can survive within the conditions of a market economy, where the ruling motive of the business is mainly the subjective self interest? (cf. subjective and objective self interest) The survey done in 2005, showed the following outcome.

TRADE

(COURSE OF BUSINESS)



loss = losses (1)
surv = survive (2)
diff = struggles with difficulties (2)
mod = modest profit and growth (10)
dinam = dynamic profit and growth (3)

This chart shows a normal distribution regarding the trade of the accounts surveyed, out of the 18 (20-2 control employees) , 10 firms carry on a modest but expanding business, 3 are extraordinary dynamic and 5 are struggling on the market. This result can be quite the same in a 'non Christian' group of accounts, and validates the results of EIRIS (Ethical Investment Research Services) that contains 15 British investment trusts. Out of the various indexes generated by the organization the Ethical Balanced index shows similar outcome: ethical (whether Christian or no) organizations, in the long term, are evaluated not better and not worse on the stock market, than the not specifically ethical ones. We can recognize that our 'idealistic' companies might have disadvantages on the market, with their moral and scale of values *"to work as a lamb among the wolves", "I am not in the gang, the sharks push me out from their circles",* but their scale of values gives them at least as much advantages in the business life: *"out of the twenty, nine admitted that their Christian identities help them in the decision making, in the struggle against corruption, in the connection with the colleagues, stakeholders, in being ethical, professional, in conflict management, in distribution policies, in preserving a good reputation and in spiritual matters: to hold out, to get strength."* [Baritz – Kocsis, 2005]

HYPOTHESIS 5: *The level of individuals*

The original goal of this paper was to observe and analyze, from an economical viewpoint, the two main thinking paradigm, the utilitarian, and the virtue-ethical, at organizational and at individual levels. The next step here is to go on on the level of individuals. The work here begins with the analysis of existing Value Surveys and the real field work can be built on the outcomes of the analysis. A regression analysis of the variables of European Social Survey (ESS), 2006 [Baritz – Szabó, 2008] will be introduced here shortly, which can be the base for further researches and questionnaires reviewing the scale of values and its economical contexts at individuals. The goal of the regression analysis was to decide, which are the main components among the different issues that influence the happiness of the Hungarians at most in 2006 (cf. Happiness paradox). At the final stage of the regression analysis the following regression equation came out:

$$c1=\beta 0+0{,}088*e48+0{,}245*e7+0{,}189*c15+ +0{,}134*e33k+0{,}273*e32+0{,}069*q11+\varepsilon$$

Where **c1**is the dependent (outcome) variable that originally measured the level of happiness of the sample of 1518, on a 11 degree scale. The rest of the variables are those ones, which influence the happiness of the surveyed ones the most. From the beta coefficients it turns out that the strongest influence on the happiness of the Hungarians has variable **e32,** which measured the satisfaction level with the *living standard* of the surveyed. The second strongest variable is **e7,** the *'autonomy'* variable ('I live the way I would like to'), the third strongest influential factor in the happiness of Hungarians is **c15,** *health condition*, and the fourth happiness component is **e33,** *spending time in the family circle.* Fifth was **e48,** *satisfaction with the job,* and the last component in the Hungarian happiness is **q11,** *importance of helping others.* ("Is it important that you help others in your neighbourhood?") Those

variables that would reflect more attitude toward the virtue-ethics, fell out during the process of the regression analysis (trust, religion, community life, actual helping). From these components we can come to the conclusion, that the Hungarians are at the beginning of the Happiness paradox curve, finding material values (living standard) the most important factor in their happiness. Hungarostudy 2006 confirmed the importance of the variable 'autonomy', with the summary that the most characteristic feature of Hungarians is their individualism [Kopp – Kovács, 2006]. This outcome reflects Nordenfeld's model of happiness, who considers autonomy the most important part of life, being the source of creativity and action.

IV. Conclusion

The survey with SME's validated the main hypothesis of this paper, presuming that if the scale of human values change, the economic order built on them will change also. We saw that virtue-ethical way of thinking generates a substantially different economic paradigm than the utilitarian, which, at the same time, is viable, as the outcomes of checking the SME's courses of business have confirmed. The results of the analysis of Value Surveys reflect the actual attitudes of Hungarians, however, a further research built on them might show what kind of changes could be occur in the quality and fulfilment of life when people think in different paradigms. This paper has explored relations between human scale of values and the economic order, which might be a good start for further investigations.

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CSR of SMEs – challenges and potential solutions

Noémi Nagypál
Budapest University of Technology and Economics, Stoczek Street 2, 1111 Budapest, Hungary
E-mail: nagypaln@eik.bme.hu

***Abstract*: The following paper focuses on the specialties ofCSR in case of small and medium sized enterprises (SMEs).After discussing the importance of the issue, a model of theCSR process is introduced, followed by analysing itsspecialties in case of SMEs. Finally, the main results of asurvey among Hungarian SMEs with good CSR practice arepresented.**

I. INTRODUCTION

CSR is mostly interpreted as the contribution of bigenterprises to sustainability, although the action of SMEsdue to their role in economic production and employmentas well as consumption of natural resources is alsoessential. Similarly, CSR tools are usually appropriate forlarge companies with special management practices andeven SMEs committed to responsible behaviour lackappropriate CSR tools and are far from realising theadvantages of their positive attitude. The first steptowards perceiving business benefits of CSR in case ofSMEs is the identification of specialties of the CSR process for them.

II. MODEL OF CSR PROCESS

In the framework of the EU-funded project, Rhetoric and Realities: Analysing Corporate Social Responsibility in Europe (RARE), a model to analyse sustainability impacts of CSR was developed [1].

The process of CSR starts with the realisation of sustainability challenges. Companies can identify these challenges either as risk or as opportunity. As a reaction companies become committed to solve the problems found relevant for them and incorporate it into their strategies. We called this "output", and this is the first step towards contribution to sustainability. In order to solve the problems companies change their practices, implement some selected CSR tools. This stage is called the "outcome". Finally, the change in company strategy and practice generates certain "impact" outside the company, e.g. the change of certain emissions or employment of handicapped people etc.

III. CSR PROCESS – SPECIALTIES FOR SMES

The model introduced above is applicable for SMEs as well. The first problem is that they often find the sustainability challenges irrelevant for themselves, stating that they do not significantly contribute to sustainability problems. The second stage, "output", that is, the change of commitment and strategy is also problematic, as SMEs very often lack strategy formulation in general. At the implementation step the problem SMEs face is that CSR tools are usually developed for big enterprises. Finally, the detection of impacts outside the company is also difficult, as SMEs are less obliged to monitor and report their emissions than big companies.

IV. SURVEY AMONG HUNGARIAN SMES

A survey among Hungarian SMEs was conducted in early 2008 in order to analyse their CSR process. The methodology is partly based on a similar survey among SMEs from the automotive supply chain [2]. Companies with good CSR practices have been surveyed. The structure of the questionnaire followed the model of CSR process discussed above. The main results are as follows.

Employees play an important role in the CSR performance of the companies. Several companies told that they consider employees' suggestions when selecting areas of action of CSR, similarly, a high proportion of respondents listed employee related issues (e.g. workplace safety, improving environmental awareness of workers) when asked about the most important areas of responsibility. Finally, when asked directly, most of the respondents agreed that employees play an important role in the CSR performance of the company.

SMEs think that big companies should support the CSR performance of their SME suppliers more actively. They realise the expectations (e.g. one of the most important motivating factors is to meet consumer requirements) but do not experience enough assistance to meet them.

Even SMEs with good CSR practice know and apply relatively few CSR tools. The reason is that these tools are usually developed for large companies.

V. CONCLUSION

Responsible business practice of SMEs is a relatively neglected area. The model of the CSR process enabled the systematic analysis of the challenges SMEs face when deciding to uptake CSR initiatives. The survey among Hungarian SMEs with good CSR practice showed that CSR of SMEs can be developed not only by direct financial support but also by improving awareness of their customers and motivating large companies to support their suppliers' action.

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