SUSTAINABILITY IN THE GERMAN DETERGENT INDUSTRY – DEVELOPING PERFORMANCE INDICATORS THROUGH STAKEHOLDER ASSESSMENT

Julia Koplin, *Research Assistant*
Torsten Behrens, *Research Assistant*
Dr. Stefan A. Seuring, *Senior Lecturer*
Dr. Uwe Schneidewind, *Professor for Production and the Environment*

Department of Production and the Environment
Institute for Business Administration
Faculty of Business, Economics and Law
Carl von Ossietzky-Universität Oldenburg
Building A5
26111 Oldenburg
Germany
phone: +49 441 798 4188, fax: +49 441 798 5852
email: Julia.koplin@web.de

ABSTRACT

Since the early years of environmentalism, the detergent industry has been under pressure from NGOs and consumers. This has led to the development of environmentally friendlier products. Meanwhile, the major burdens along the ecological life-cycle of detergents are well known. While the path towards an integrated product policy has been set, further developments towards sustainability are necessary.
In a project conducted by the University of Oldenburg in cooperation with the IKW (Industrieverband Körperpflege und Waschmittel e.V., German Detergent Manufacturers Association), future potentials for sustainable development within this sector in Germany were explored. To explore these potentials, it is necessary to develop a set of indicators. Because these indicators form the final goal of the study, the process to identify them plays an important role. This is in congruence with research on performance measurement systems, where it is regularly emphasized that the content of such indicators and the process to reach them cannot be separated from each other.
This paper will review the project methodology and present some interesting findings. A stakeholder assessment plays the central role of the project. Hence, twenty key stakeholders were selected to represent all relevant groups. Stakeholder interviews and two workshops provided a basis for discovering the central issues to be tackled by the German detergent industry. Several review steps were included to ensure that all issues addressed are agreed upon within the stakeholder group.
The environmental product life-cycle and stakeholder concept provide the theoretical basis for the so called sustainability matrices, one each for the environmental, economic and social

dimension. These matrices were used to facilitate discussions regarding relevant sustainability issues. Hence, eleven key sustainability assessment fields were identified. Among each field, one to three indicators were selected describing the current situation and allowing exploration of future potentials for sustainable development. These indicators and their interrelations were tested and modified according to the specific situation of companies in the German detergent industry. The study gives evidence regarding how this sector can contribute to sustainability by e.g. educating consumers or contributing to sustainability projects.

Key words:
sustainable development, stakeholder assessment, life-cycle, indicators, detergent industry

1 INTRODUCTION

Sustainable development as a concept is often agreed upon as a general objective. A definition given by the Brundland Commission is: “Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (WCED 1987, p. 43). While this definition sets the general tone, it is necessary to develop concepts helping to identify sustainability “hot spots” in certain fields. Even though various concepts and methods have been presented, it can be observed that they often stay on a rather general level where it is hard to identify specific indicators and potentials for future development. Studies such as Sustainable Netherlands (see Buitenkamp et. al. 1993) or Sustainable Germany (see BUND, Missereor 1996) offer a valid background. The overall assessment of a country yields guidelines on a macro level (country or multi-nation institution), which must be transformed into objectives on a meso (industrial branch) or micro level (enterprise) (for the links of these level see: Schneidewind, Seuring 2000). The enterprise level is part of activities such as the Global Reporting Initiative (GRI) (for more information see: www.globalreporting.org) (see GRI 2000), or specific guidelines such as the report of two German research institutes (IÖW, IMUG 2000). The meso level has hardly been part of research or practical work towards sustainability. (There are few studies on environmental management and change processes in branches: see Dyllick et al. 1994.)
As sustainable development covers two perspectives, a second issue arises. On the one hand, the process towards sustainable development is important and stakeholders must be involved. As a result of such processes, objectives may be set and indicators identified helping to assess how the overall aim of sustainable development may be advanced. It has to be kept in mind that these are two issues that cannot be separated from each other. Process and goals reached are highly dependent on each other. This links the project to another important methodological basis, namely performance measurement.
The German Detergent Manufacturers Association (Industrievereinigung Körperpflege und Waschmittel, IKW, see www.ikw.org) and the Chair for Production and the Environment at the University of Oldenburg, Germany (www.uni-oldenburg.de/produktion) set up a research project aiming to assess the current situation and future potential towards sustainable development in the German detergent industry. The project forms part of the proactive environmental and sustainability strategy of this industrial association.

1.1 Background Information on the German Detergent Manufacturers Association (IKW)

The IKW consists of about 350 member companies ranging from large multinational corporations such as Procter and Gamble, Henkel, Lever Fabergé, or Reckitt Benkiser, to a broad range of small and medium sized enterprises. These companies produce and sell a wide range of detergents and other chemicals that form washing powders, shower gels or dishwashing liquids. From the first days of environmentalism in the mid 60s, this branch has been under pressure from legal acts and non-governmental organisations (NGOs). Problems addressed include “foam mountains” on rivers, euthropication of rivers and lakes, use of non-biodegradable resources, etc. While the industry has reacted to these pressures, it has also taken a proactive role in developing new analytical techniques helping to identify environmental problems and sometimes even setting an example for other branches within the chemical industry.

1.2 Structure of the Paper

Building on this background information, the rest of the paper is organised into four parts. First, some issues concerning performance measurement are addressed. Next, the research methodology is described. The single steps carried out to conduct the project are briefly described briefly together with the conceptual basis addressed. One sustainability matrix for each dimension (environmental, economic, social) is presented which provides an overview of issues within the dimension. The major results of the stakeholder assessment are presented, namely the research fields and indicators selected therein. Some conclusions for future research and implications for future work within the IKW are also addressed.

2 METHODOLOGY FOR SUSTAINABILITY ASSESSMENT

2.1 Some Introductory Remarks on Performance Measurement

Performance measurement has gained great attention in recent years, which can be seen in all kinds of management literature. Neely et. al. (1995) offer definitions of relevant terms:

- Performance measurement can be defined as the process of quantifiying the efficiency and effectiveness of action.
- A performance measure can be defined as a metric used to quantify the efficiency and effectiveness of an action.
- A performance measurement system can be defined as a set of metrics used to quantify both the efficiency and effectiveness of actions.

As the definition states and as observed in all forms of management systems, there is a close link between objectives, i.e. performance measures, specified in a set of indicators, and the process to define these indicators (see also Kaplan, Norton 1996). Furthermore, this is not a one-off process, but one leading to a continuous improvement cycle, as it is not sufficient to develop a set of indicators only once. The performance measurement system must be reviewed regularly to maintain its relevance (see Kaplan, Norton 1996; Neely et. al. 2000), which provides a link to the dynamic perspective present in sustainable development (see e.g. Welford 1998).

Various development guides for performance measurement systems have been proposed (see e.g. Kaplan, Norton 1996; Bitici, Carrie, McDevitt 1997; Neely et al. 2000). Within these guidelines various issues are raised. One central aspect is the involvement of all relevant people, e.g. the company employees. Only the early participation of all relevant groups ensures, that all important issues are covered and that the results obtained, specially the indicators identified, will be used in the measurement process later on. This application will then allow to control and improvement of related aspects. For a sustainability assessment, all relevant stakeholders have to be taken into account.

2.2 The Sustainability Assessment Process

As mentioned, the detergent industry has a long history of environmental involvement. Hence, the previous work of the German Detergent Manufacturers Association offered a valid basis for the project. This allowed insights into the industry and understanding of measures previously taken. In earlier years, this was often done in response to demands of environmental pressure groups. Yet in recent years, the industry has taken proactive measures, such as the Code of Environmental Practice (see Claus, Rietmann 1998) and the Washright Campaign (see www.washright.com, last checked 28.02.2002). The Code aims to improve the environmental behaviour of all member companies, while the Washright Campaign uses tools for communication to consumers (websites, TV-spots) to improve their behaviour in using detergents, e.g. washing at lower temperatures or using as little detergent as possible.
During discussions with representatives of the IKW, it became evident that their wish to further contribute to sustainable development could only be reached by involving stakeholders. Future goals and improvement potential will have to be based on a broad discussion with stakeholders, thereby picking up on lessons learned in the performance measurement project. The term stakeholder assessment for sustainable development is defined as the systematic engagement of all relevant stakeholder groups in a process aiming to identify the related sustainability aspects and corresponding indicators that allow their measurement and improvement.

No.	Step Carried Out	People involved
1	Basis Definition of the Goal of the Study	IKW, UOL
2	Review of Previous Work	UOL
3	Developing a First Discussion Paper	UOL, (IKW)
4	First Stakeholder Workshop	UOL, IKW, SH
5	Review and Inclusion of Results of the Stakeholder Workshop	UOL
6	Detailing Research Fields	UOL
7	Development of a First Set of Indicators for Each Research Field	UOL
8	Stakeholder Interviews to Validate Research Fields and Indicators	UOL, SH
9	Second Stakeholder Workshop	UOL, IKW, SH
10	Preparation of the Project Report	UOL

IKW = Representatives of the IKW (German Detergent Manufacturers Association)
UOL = Research Team of the University of Oldenburg
SH = Stakeholders (as mentioned above)

Table 1: The single steps carried out during the project

As summarised in Table 1, ten steps were carried out during the project:.

1. Basic Definition of the Goal of the Study

After the first contact between the IKW and the research team of the University of Oldenburg was made, a project meeting helped outline the project and define the goal of the study. The objective was to identify the current status and potentials for future development towards sustainability in the German detergent industry.

2. Review of Previous Work

As mentioned, the German detergent industry has an extensive record of engagement in environmental issues. This had to be reviewed at to be able to moderate the discussions with the stakeholders. It also helped to gain insights into the detergent industry.

3. Developing a First Discussion Paper

Before the stakeholders were involved, a discussion paper was prepared and sent to them. This provided a basis for the debate at the first stakeholder workshop. It was felt that the discussion would facilitate a faster step towards the key issues. As a supportive instrument the sustainability matrices were developed, which will be presented later on.

4. First Stakeholder Workshop

During the workshop, the sustainability matrices were presented. They helped condense the issues discussed to the relevant assessment fields, which would allow measurement and improvement of sustainability issues in the German detergent industry. Furthermore, the next steps within the project were discussed. The workshop formed an important step in the process and was welcome by the stakeholders, who demanded to be part of the future process.

5. Review and Inclusion of Results of the Stakeholder Workshop

After the workshop, the discussion was summarised in a protocol which was sent to the stakeholders. This included the revised sustainability matrices.

6. Detailing Assessment Fields

The matices formed the basis for identificaiton of the sustainability assessment fields comprising the major issues for a sustainable development in the detergent industry. The fields have to cover the three dimension of sustainability and, if possible, integrated aspects superior to the single dimensions.

7. Development of a First Set of Indicators for Each Research Field

Within the next step a set of indicators was developed for each assessment field. These indicators should allow measurement of the current status. As the identification of the assessment field an the related indicators were central for the project, it was felt that a detailed involvement of each stakeholder would be beneficial. To prepare for the interview, a documentation was sent to the stakeholders.

8. Stakeholder Interviews to Validate Assessment Fields and Indicators

A total of 18 semi-structured interviews was carried out reviewing the previous steps and including a detailed discussion of the assessment fields. The relevance of each assessment field was ranked on a 1 (unimportant) to 5 (important) scale, allowing validattion of the importance of the assessment field among stakeholders.

9. Second Stakeholder Workshop

The aim of the second stakeholder workshop was to bring all stakeholders together and discuss contrasting opinions about single assessment fields and indicators. Mainly, conclusions regarding all major topics were reached. Still, one assessment field was only added as this stage of the project emphasising the workshops' importance and relevance.

10. Preparation of the Project Report

Finally, a project report was prepared providing the basis for the current activities of the IKW to fill data into the assessment fields and indicators. This process is still in progress and will form the basis for future work of the IKW.

The instruments employed in the project and the feedback-related involvement of the stakeholders is summarised in Figure 1. The next section of the paper will provide details on the single levels of the sustainability assessment methodology.

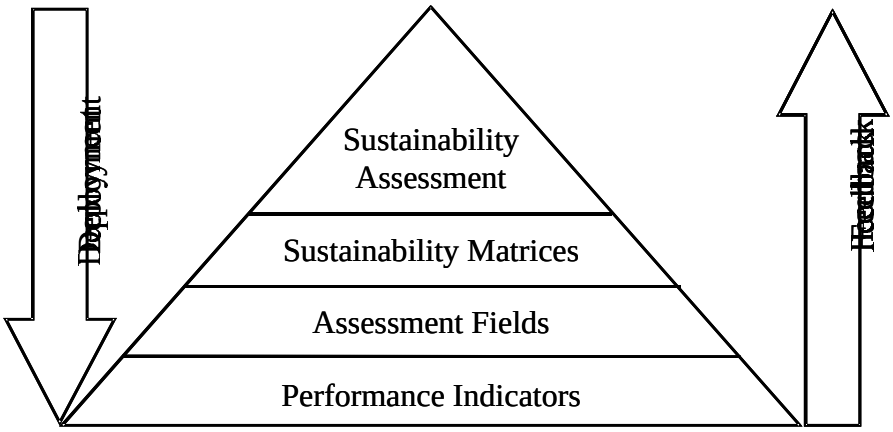

Figure 1: Deployment and feedback in the research project

As can be seen from the sequence of the steps conducted, the stakeholders were involved three times. Twice at the two stakeholder workshops conducted in October 2001 and January 2002 as well as during interviews carried out mainly in December 2001.

3 CONCEPTUAL BASIS OF THE SUSTAINABILITY ASSESSMENT

Before the results of the project are presented, it is necessary to review its theoretical basis. Although the process has been described, the sustainability assessment needs to rest on a theoretical basis. Sustainable Development is often said to have three dimensions: an environmental, economic and a social one. For the integration of these three dimensions into one assessment, the product life-cycle concept and the stakeholder concept were chosen. The product life-cycle allows addressing the environmental dimension, while the stakeholder interests represent the economical and social dimensions. These had to be combined with the most important aspects in each field, leading to the three so-called sustainability matrices. These matrices represent a simplified assessment of each dimension. Discussing them jointly and looking at their interlinkages offers a chance to discover superior issues.

3.1 Conceptual Basis 1: Product Life-Cycle

Within the environmental debate, the product life-cycle forms a discussion centrepiece, as it allows an assessment of all related environmental aspects. The product life-cycle covers all

stages from raw material extraction to final disposal or recycling of a certain product. In recent years, various life-cycle assessment studies on detergents have been conducted and well documented, both on a national (German) level (see Grießhammer et al. 1997) and on the European level (see Stalmans et. al. 1995, p. 84-109; Janzen 1995, p. 110-121). The major stages of the product life-cycle of a detergent are:

- Production of the raw materials, e.g. tensides,
- Fomulation of the final detergent,
- Packaging materials,
- Distribrution,
- Use phase,
- Disposal (waste water treatment).

These life-cycle assessment data formed a valid basis and are picked up in the environmental sustainability matrix.

3.2 Environmental Dimension Assessment

The data gathered in the life-cycle assessment shows, that the major environmental burden occurs during the production of raw materials, use phase and disposal. The production of the raw materials uses various renewable and non-renewable materials to create tensides, bleaches, perfumes etc. During the use phase, the detergents are applied, e.g. in a washing machine or dishwasher. Water and energy are needed for the process. Finally, the detergent moves on to the wastewater and is treated. Therefore, a significant chemical oxygen demand (COD) results. In short, these are the major burdens identified in a life-cycle assessment. This data forms the basis for the analysis within the environmental dimension, as displayed in Figure 2.

Life-Cycle Environmental Burden	Production of Ingredients	Production of Detergent	Packaging	Distribution	Use Phase	Disposal
Energy						
CO_2						
COD						
Waste						
Resources						
Risks						

Black = High relevance, Grey = medium relevance, White = low relevance

Figure 2: The environmental sustainability matrix

As the matrix displays, the major environmental aspects are (1) protection of resources during production, (2) low energy consuption during the washing cycle and (3) low disposal of detergent to the aquatic environment. These topics will be taken into account in the assessment field.

3.3 Conceptual Basis 2: Stakeholder Concept

Companies do not only serve shareholders, but are embedded in their economic, ecological and social environment, which they must to take into consideration when doing business. The term stakeholder covers “those groups who can affect or are affected by a firm’s objective” (Freeman 1984, p. 38). This implies that a company must meet the needs of all stakeholder groups. In return, the stakeholders grant resources to the firm such as trust, social acceptance, information or know-how.
Therefore, the major stakeholders of the Detergent Industry had to be identified. In discussion with members of the IKW board, 20 people were identified, who were seen as being able to represent all relevant stakeholder groups. This included five representatives of IKW member companies, one of the two Chief Executive Officers of the IKW, three members of free research institutes, one representative of the Association of German Housewives, two members of the German Environmental Protection Agency, one representative of the German Ministry for the Environment, four representatives of German consumer protection organisations, and three researchers from other universities. Not all individuals involved took an equal part during the stakeholder assessment. Some contributed to single steps only. In total, wide ranges of contributions were taken into account, resulting in an overall representative process agreed upon by the stakeholders.
While these people represent the stakeholders for the assessment, certain stakeholder groups had to be identified. After several discussions before and during the first stakeholder workshop, the following groups were taken into account:

- Suppliers, Freight forwarders
- Employees,
- Management,
- Shareholders,
- Retailers,
- Consumers,
- Authorities,
- Non-Governmental Organisations (NGOs).

This formed one axis of the economic and social dimensions. Still, the relevant aspects within these dimensions had to be specified to find out how the stakeholders were affected. This had to be done separately for the two dimensions.

3.4 Economic Dimension Assessment

Within the economic dimension, issues raised could be taken from conventional economic thought. Usual goals stated are economic stability, employment, qualitative and quantitative growth, or no inflation. Furthermore, shareholders demand their share and expect responsible management, leading to long-term company growth. This can best be reached by high quality products and continuous innovation, which are both of benefit to the retailers and customers.

These aspects are now assessed in how they affect individual stakeholders. Workers demand employment, shareholders want money and long term growth, customers want high quality products at low prices, just to name the most important issues. For Details see Figure 3.

Stakeholders / Economic Aspects		Supplier / Freight For-warders	Company			Retailer	Con-sumers	Authori-ties	NGOs
			Emplo-yees	Manage-ment	Share-holder				
Economic Responsibility									
Stability	Qualitative Growth								
	Price Deve-lopment								
	Employ-ment								
Long Term Growth									
Innovation									
Quality									

Black = high relevance, Grey = medium relevance, White = low relevance

Figure 3: The economic sustainability matrix

The major aspects that could be condensed were (1) the ability to innovate, as this ensures jobs for the employees, revenue for the company and dividend for the shareholders. (2) Second, price development guarantees that customers can afford the products of the detergent industry, while (3) washing as value pertinent to fabric life ensures long-term usage.

3.5 Social Dimension Assessment

Stakeholders also form an axis of the social sustainability matrix. Again, the major aspect in the social area had to be identified. A first list was put together by the research team and discussed with the IKW representative. The discussion at the first stakeholder workshop was used to establish a set of aspects covering health, social responsibility, equity, individual contentment, satisfaction of needs, participation and communication, and education. The resulting judgements within the single fields are displayed in Figure 4.
The most important aspect relates to employees and consumers, so that their (1) health is protected. Furthermore, washing should be an (2) easy task. A highly debated topic is touched upon by role allocation in (3) household laundry, which refers to gender issues in consumer behaviour. Women were the strongest supporters, but also the strongest opponents to this assessment field.

So far, integrated aspects have not been discussed allowing the general development of sustainability in the German detergent industry, as industry can influence customer behaviour. Furthermore, companies can report on their activities towards sustainability, therefore linking single activities with the overall goal.

Stakeholders / Social Aspects	Supplier / Freight For-warders	Company			Retailer	Con-sumers	Authori-ties	NGOs
		Emplo-yees	Manage ment	Share-holder				
Health								
Social Responsibility								
Equity								
Individual Contentment								
Satisfaction of Needs								
Participation/ Communication								
Education								

Black = high relevance, Grey = medium relevance, White = low relevance

Figure 4: The social sustainability matrix

3.6 Identification of the Specific Assessment Fields

The three sustainability matrices provide an overview of the aspects important for the future potential of a sustainable development in the German detergent industry. While the methodology would be applicable to other areas, it must be emphasised, that the results presented are specific to the German detergent industry as an industrial sector.
The analysis had to be specified to reveal the approximately ten hot factors for future sustainable development. The black and grey shaded fields of the matrices provide some hints. The issues were selected through a discussion process, allowing no algorithm to transfer the results of the sustainability matrices to the assessment fields. The assessment field should cover all three dimensions equally. It should also provide the basis for a detailed analysis regarding where suitable indicators can be identified allowing measurement of the present state in the German detergent industry and revealing potential for future optimisation.
Subsequently, the assessment fields and related indicators are briefly presented. Some hints were given before. Table 2 provides a summary of all assessment fields and indicators. As can be seen, four groups are distinguished. Three assessment fields each are related to the environmental, economic or social dimension. Two assessment fields are subordinated to these dimensions and can be seen as integrated assessments fields (see GRI 2000, p. 4). During the

interviews, one step was included to validate the relevance of the assessment fields. All stakeholders involved were asked to rate the importance of each assessment field on a scale of 1 to 5. Calculated as a percentage of the highest possible value, the lowest value obtained was 67%. This was seen as a good indication of the high relevance of all assessment fields.
The scope of the paper centres on identification of the assessment fields and indicators. Some hints on the measurements carried out to fill the indicators are included. In some cases, the measurements conducted and values obtained will be included in the discussion.

4 SUSTAINABILITY ASSESSMENT FIELDS AND INDICATORS

An overview of the assessment fields and the related indicators is given in Table 2. Subsequently, the single assessment fields are discussed in detail.

Assessment Fields	**Related Indicators**
Integrated Assessment Fields	
Sustainability in the German detergent industry	· Effectiveness of educational consumer advertisement · Fulfilment of voluntary commitments
Sustainability reporting of IKW member companies	· Number of companies publishing a sustainability report · Compliance with Global Compact
Environmental Assessment Fields	
Reduction of pollutants to the aquatic environment	· Rate of persistent ingredients per kg laundry
Reduction of laundry temperature / energy	· Energy demand per kg laundry
Protection of resources	· Use of detergent per kg laundry
Economic Assessment Fields	
Ability to innovate	· Time for implementing innovations as a reaction to consumer demands and environmental problems · Innovations during a set time period
Price development	· Price of detergent in relation to cost of living · Average return on investment in the detergent industry
Washing as value pertinent to fabric life	· Average number of washings during a textile's lifetime
Social Assessment Fields	
Ease of household tasks	· Time needed per kg laundry
Role allocation in laundry	· Percentage of men who do laundry
Health / hygiene as a result of laundry	· Number of job-related diseases over time · Number of health-based medical conditions over time · Wash temperature corresponding to constant standards of hygiene

Table 2: The Assessment Fields and the Related Indicators

4.1 Integrated Assessment Fields

The two integrated assessment fields have been identified as being able to describe the overall commitment of the German detergent industry towards sustainability.

- Sustainability in the German detergent industry

This fields sounds tautological to the whole study, yet the two indications identified are best gathered under this heading. The indicator "effectiveness of educational consumer advertisements" is an important one, as the consumers play a central role in detergent use. With their behaviour they decide whether the needed quantity and quality of detergents are used or whether overuse occurs, leading to a higher total resource consumption. In contrast, the second indicator fulfilment of voluntary commitments directly addresses the companies of the industrial sector and the IKW as their association. The IKW has signed more than 25 voluntary commitments within the last two decades (see BDI 2001). All of these voluntary commitments have been fulfilled completely and on time, indicating commitment of the IKW and its member companies towards environmental and consumer protection. The second integrated assessment field continues this argument.

- Sustainability Reporting of IKW Member Companies

As mentioned before, sustainability reporting of companies has gained considerable momentum in recent years (see e.g. GRI 2000). Various companies have published such reports already, e.g. Henkel, Düsseldorf (see Henkel 2000). These reports address issues beyond the scope of corporate environmental reports. Still, the indicator looking at the companies of the IKW that publish such a report will be distorted by the size of the firms. Usually, small and medium sized enterprises (SMEs) find it more difficult to deal with such issues than large multinationals. Hence, a second indicator "compliance with the Global Compact" completes this assessment field. The Global Compact covers topics in human rights, labour and environment, it was announced at the World Economic Forum, Davos, on 31st January 1999, by UN Secretary-General Annan (for more information see www.unglobalcompact.org, see United Nations 2001). Both indicators ensure, that companies comply with regulations and international standards.

4.2 Environmental Assessment Fields

The environmental assessment fields address the major environmental burden indicated by the life-cycle assessment studies conducted. The reduction of pollutants to the aquatic environment, measured in the rate of persistent ingredients per kg laundry, and reduction of the wash temperature and energy consumption of the washing cycle, measured by the energy demand per kg laundry show this directly. Again, two major actors and their behaviour are evident. The consumers decide how they wash, while industry provides the detergents. Hence, the third assessment field, the protection of resources in general and its indicator are rather straight forward.

Still, one major issue arises. The use of detergents in the laundry cycle is highly dependent on the washing machines used and on the apparel treated. Both are manufactured and sold by other industries. Future potentials for a sustainable development might only be reached, if companies cooperate beyond traditional industrial sectors. This issue will be taken up again in the concluding section, where some optimisation potentials are highlighted.

4.3 Economic Assessment Fields

The ability to innovate is central for all companies wanting to stay in the market long term. This assessment field contains the aspects of long-term company growth, both in a quantitative and qualitative manner. This can be measured by two indicators. The time for implementing innovations as a reaction to consumer demands links the companies directly to the consumers. The time for reaction to environmental problems shows how well companies are prepared to react to them. While the industrial sector might look rather stable and less innovative at first glance, there have been various major innovations in recent years, e.g. compacted powders. Furthermore, tabs are used for dishwashers, where all three components, shiner, decalcifier and detergent have been formed into one piece allowing easy consumer application.
The second economic assessment field chosen was price development, as this forms the direct link between producers and customers. Yet, price development must be seen in relation to the cost of living, as only this offers a suitable measurement. The second indicator in this field addresses the companies again, as it takes the average return on investment in the detergent industry into account. Combined, the two indicators represent a dynamic perspective that closely relating to economic stability.
The third assessment field has a strong connection to the textile and apparel industry. Washing helps maintain fabrics. Therefore, the average number of washings during a textile's lifetime was chosen as a representative factor.

4.4 Social Assessment Fields

The social assessment fields mainly relate to the consumers and employees. The ease of household tasks can be measured by the time needed per kg laundry. Gender issues are addressed in the second assessment field, i.e. role allocation in laundry. The related indicator is the percentage of men who do laundry. Both indicators provide evidence regarding how people's life patterns change over time.
The last assessment field is health and hygiene as a result of laundry. Three indicators were identified: The number of job-related diseases over time, the number of health-based medical conditions over time, and wash temperature corresponding to constant standards of hygiene. The contribution of modern washing and cleaning techniques to health and hygiene are evident and help improve everyday life.

5 POTENTIALS FOR SUSTAINABLE DEVELOPMENT IN THE GERMAN DETERGENT INDUSTRY

The data collection to fill the identified indicators is still in progress, so only some hints for specific measures have been given. Still, the process of the project allowed identification of three major topics for a future path towards sustainable development in the German detergent industry.

5.1 Environmental Quantum Leap

The industrial sector, both at a German and international level, implemented various steps to improve the environmental performance of products and production facilities. Consequently, it

is hard to improve this with further marginal innovations. Major improvements in the environmental dimension might only be reached by radical innovations such as washing with cold water, or without detergents or other chemicals, e.g. by applying ultrasound. This might lead to the use of fewer resources and allow a greater percentage of the world population to wash their clothes with advanced technology without threatening regional and global ecosystems.

5.2 Cooperation with Consumers

The issues presented offer evidence that consumers play a central role in future developments, which must be integrated into the activities of each industrial sector, as only the existence of consumer needs guarantees the long term existence and growth of companies. Still, companies can drive demand patterns and influence them with their marketing power. The Washright Campaign is one example where, on a European scale, all detergent manufacturers use advertisement channels (TV, internet) to provide information to consumers. This should enable consumers to change or improve their behaviour in doing laundry, so that less energy, water and detergents are needed.
Major improvements might be reached if the laundry process is further improved. Washing machines might be equipped to help users apply the correct washing programme and dosage . Machines might be able to measure how dirty clothes are and apply detergent automatically. These ideas guide the way to the third topic.

5.3 Extended Strategies for Cooperation with Other Industries

The detergent industry is highly dependent on two other sectors: the apparel and fashion industry and the “white goods” or household appliance industry. Washing machines or dishwashers are developed and sold by this industry. Hence, energy and water consumption, central to environmental performance, or the time needed for a washing cycle, an important element of the social dimension, are predetermined by this industry. The detergent industry’s influence on the processes after basic investment in such a household appliance is rather marginal. In both cases, better cooperation across traditional supply chains are needed. The household appliance industry and the detergent industry would have the chance to develop improved equipment allowing easier, faster, and cheaper washing cycles leading to an improved sustainability performance.
Cooperation with the fashion industry might lead to new fibres and textiles needing less care or that can be cleaned at lower temperatures.
Still, the trade-offs that might arise from such optimisations must be taken into account. Such cross-industry developments might tie companies together, making them (economically) dependent on each other. Their products might only be used jointly, limiting the customers’ freedom of choice and might therefore have a negative impact on sustainability.

6 CONCLUSIONS

The project and its findings presented in this paper were driven by a pragmatic approach to identifying potentials for a sustainable development in the German detergent industry. Previous work seemed either too broad or specific to be applied in the study. During early discussions with members of the board of the IKW, it became evident that a meaningful

outcome can only be reached by involving stakeholders. Hence, performance measurement thought was taken up and a stakeholder assessment process was structured as a central part of the project. Consequently, the results of the project are reached through discussion and revision. The steps carried out in this stakeholder assessment are not fixed, but have to be set appropriate to the situation analysed. One example might explain this. At the beginning of the project, only one workshop was planned. Because this workshop raised more questions than it answered, it was decided to carry out stakeholder interviews and a second stakeholder workshop.

This questions the methodological approach chosen, yet looking at the complexity of aspects covered, no other approach seemed suitable. Through stakeholder involvement, the major aspects for a sustainable development in the German detergent industry were identified as presented in the assessment fields and related indicators. The issues raised in these fields provide a chance for both a look back on achievements reached in recent years as well as a chance to discover potentials for future optimisation towards a sustainable development in the German detergent industry, which was among the core objectives of this study.

Currently, the data collection takes places. The indicators will be measured for three different points in time to get a record of historic achievement. This will be used to carry on with the process and set new goals on what to reach at the level of the single indicator. Later on, a complete review of the assessment fields and indicators might be necessary, as new information might become available or stakeholders might address new issues. The IKW will continue to develop sustainability and help its member companies to contribute to the overall objective.

7 REFERENCES

BDI (Bundesverband der Deutschen Industrie) (ed.) (2001): Freiwillige Vereinbarungen und Selbstverpflichtungen (Voluntary Commitments), Berlin.

Bitici, U. S., Carrie, A. S., McDevitt, L. (1997): Integrated performance measurement systems – A development guide, in: International Journal of Operations and Production Management, Vol. 17, No. 5 (1997), p. 522-534.

Buitenkamp, M. et. al. (ed.) (1993): Sustainable Netherlands – Action Plan, Friends of the Earth Netherlands, Amsterdam.

BUND (Bund für Umwelt und Naturschutz Deutschland); Missereor (ed.) (1996): Zukunftsfähiges Deutschland – ein Beitrag zu einer global nachhaltigen Entwicklung (Sustainable Germany – A contribution to a global sustainable development), Basel.

Claus, F.; Rietmann, S. (1998): Der Code Umweltgerechtes Handeln – Ergebnisse des Verbraucherworkshops des Industrieverbandes Körperpflege und Waschmittel e.V. (IKW), Dortmund.

Dyllick, T.; Belz, F. ; Hugenschmidt, H.; Koller, F.; Laubscher, R.; Paulus, J.; Sahlberg, M.; Schneidewind, U. (1994): Ökologischer Wandel in Schweizer Branchen (Environmental Change in Swiss Sectors), Verlag Paul Haupt, Bern.

Freeman, R.E. (1984): Strategic Management – A Stakeholder Approach, Boston 1984.

GRI (Global Reporting Initiative) (ed.) (2000): Sustainability Reporting Guidelines on Economic, Environmental, and Social Reporting, Boston. (See www.globalreporting.org).

Grießhammer, R.; Bunke, D.; Gensch, C. (1997): Produktlinienanalyse Waschen und Waschmittel, (Product line assessment washing), Umweltbundesamt, Berlin 1997.

Henkel KGaA (ed.) (2000): Sicherheit, Gesundheit, Umwelt – Auf dem Weg zu Nachhaltigkeit, Nachhaltigkeitsbericht Henkel 2000 (Safety, Health, Environment – On the path to sustainability, Sustainability Report Henkel 2000), Düsseldorf.
Download available at www.henkel.com/sustainability).

IÖW; IMUG (Institut für ökologische Wirtschaftsforschung; Institut für Markt - Umwelt – Gesellschaft) (ed.) (2000): Schritte zur Nachhaltigkeitsberichterstattung (Steps towards sustainability reporting), Diskussionspapier IÖW 50/00, Berlin.

Janzen, D. C. (1995): Methodology of the European Life-Cycle Inventory for Detergent Surfactants Production, in: Tenside, Surfactants, Detergents, Vol. 32, No. 2 (1995), p. 110-121.

Kanning, H., Müller, M. (2001):Bedeutung des Nachhaltigkeitsleitbildes für das betriebliche Management (The relevance of the concept sustainable development for management); in: Baumast, A.., Pape, J. (ed.): Betriebliches Umweltmanagement: Theoretische Grundlagen, Praxisbeispiele, (Corporate Environmental Management – Theoretical Basis and Practical Examples), Eugen Ulmer Verlag, Stuttgart, p. 13-27.

Kaplan, R. S., Norton, D. P. (1996): The Balanced Scorecard – Translating Strategy to Action, Harvard Business School Press, Boston.

Neely, A., Gregory, M., Platts, K. (1995): Performance measurement system design: A literature review and research agenda, in: International Journal of Operations & Production Management, Vol. 15, No. 4 (1995), p. 80-116.

Neely, A., Bourne, M., Kennerly, M. (2000): Performance measurement system design: developing and testing a process based approach, in: International Journal of Production Management, Vol. 20, No. 10 (2000), S. 1119-1145.

Poltorzycki, S., Shopley, J. (2000): Reaslising the Business Value of Sustainable Development, An Arthur D. Little Survey on Sustainable Development and Business, Cambridge 2000, p. 8.
Download www.environment-risk.com/asp/responsible/articles/default.asp, 29.05.2001.

Schneidewind, U., Seuring, S. (2000): Glanz und Elend der Stoffstrom-Ökonomie – Grenzen und Chancen der Analyse und Regulierung aus ökonomischer Sicht (Splendour and Squalor of substance orientated environmental regulation – Limits and Opportunities from an economic perspective), in: Führ, M. (ed.): Stoffstromsteuerung durch Produktregulierung – Rechtliche, ökonomische und politische Fragen (Substance Chain Control by Product Regulation), Nomos Verlag, Baden-Baden, p. 161-173

Stalmans, M. et. al. (1995): European Life-Cycle Inventory for Detergent Surfactants Production, in: Tenside, Surfactants, Detergents, Vol. 32, No. 2 (1995), p. 84-109.

United Nations (ed.) (2001): The Global Compact – Corporate Leadership in the World Economy, New York. (See www.unglobalcompact.org).

WCED (World Commission on Environment and Development) (ed.) (1987): Our Common Future,Oxford University Press, Oxford.

Welford, R. (1998): Corporate Environmental Management, Technology and Sustainable Development: Postmodern perspectives and the need for a critical research agenda, in: Business Strategy and the Environment, Vol. 7, No. 1 (1998), p. 1-12.