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(Guido Becke, Eva Senghaas-Knobloch)

Nachhaltigkeitsmanagement und Unternehmensentwicklung

Effizienz und Nachhaltigkeit; Probleme der strategischen Planung nachhaltiger Unternehmensentwicklung und Kooperationsperspektiven.
(Georg Müller-Christ, Brigitte Nagler)

Nachhaltigkeitsorientierte Technikentwicklung und -bewertung

Stoffstrommanagement und Kreislaufwirtschaft, technikorientierte Leitbildforschung und sozialwissenschaftliche Untersuchung der Technikgenese und -regulierung mit Blick auf moderne Schlüsseltechnologien.
(Arnim von Gleich, Hans Dieter Hellige, Ulrich Dolata)

Nachhaltigkeit in Kommune und Region - Change-Management und Alltag

Entwicklung nachhaltiger Handlungsmuster und Strukturen in Politik und Verwaltung, Routinen der persönlichen Alltagsgestaltung und -organisation, Konsummuster und Lebensstile.
(Hellmuth Lange, Ines Weller)

MARTINA SCHÄFER*

THE CONTRIBUTION OF A REGIONAL INDUSTRIAL SECTOR TOWARD QUALITY OF LIFE AND SUSTAINABLE DEVELOPMENT: INDICATORS AND PRELIMINARY RESULTS

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1 Introduction

Particularly since national governments are step by step privatizing some of their traditional fields of action related to public welfare (e.g., health, education), stakeholders are calling for business to become an 'active positive force' in contributing toward social and ecological development goals instead of simply 'doing less harm' to society and the environment (Warhurst, 2005). For instance, a survey of public opinion in 21 countries showed that most people agree that large companies should do more than give money to solve social problems (Environics, 2003). At the same time, many businesses seem to be aware of the role that they are expected to take. For instance, according to a survey conducted in the United States, 53% of the enterprises believe that the public expects them to contribute time and money toward community needs and to be involved in solving social problems (Center for Corporate Citizenship at Boston College and U.S. Chamber of Commerce, 2004).

Discussions about business activities related to society and the environment include those about 'corporate social responsibility', 'corporate citizenship' and 'sustainable enterprises'. All of these discussions have in common that they mainly deal with large multinational companies, while putting less emphasis on small and medium-sized enterprises (SMEs). However, the social and environmental commitment of small and medium-sized businesses may be just as strong as in large corporations (Center for Corporate Citizenship at Boston College and U.S. Chamber of Commerce, 2004). In addition, a number of industries consist primarily of SMEs, providing a large number of jobs and playing an important role in regional development.

Even though not much methodological research seems to have been done on how to estimate the contributions of SMEs toward quality of life and sustainable development, there are some empirical studies on how they differ in their motivation and strategies from large companies. For instance, small firms seem to have less need than large companies for formal instruments facilitating the communication of values and norms within the enterprise and to their customers. Rather, they seem to prefer direct contact and a dialogue strategy oriented at the expectations of their individual customers and other stakeholders.[1]

Thus, since SMEs typically do not communicate about their social and ecological engagement in a systematic way to the public, it tends to be not publicly acknowledged. Also, since different strategies and activities are applied by SMEs in comparison to large firms, their social and ethical activities may not be measurable in the same way (Spence et al., 2003; Department of Trade and Industry, 2002; Kenner Thompson and Smith, 1991; Quinn, 1997; Spence, 1999; Vyakarnam et al., 1997).

The present paper presents a method developed within the project 'Regional Wealth Reconsidered'[2] for estimating the contributions toward quality of life and sustainable development made by a regional industrial sector consisting of SMEs. It is organized as follows: In Section 2, we describe the overall analytical framework of the method, the development process for the indicator set, and the empirical design. Section 3 provides insight on preliminary empirical results of a study investigating the organic agriculture and food sector in the Brandenburg-Berlin region, Germany. In particular, we present data about four fields of activity that are assumed to: (1) contribute toward 'human potential' through formal and informal education, (2) contribute toward the stabilization of social resources, (3) improve non-material quality of life aspects, and (4) contribute toward environmental protection and aesthetic attractiveness of the region's landscape. In Section 4, we summarize our findings and draw conclusions about the method itself and the kind of information it generated.

2 A method for analyzing the contribution of a small-business industrial sector to 'sustainable wealth' of a region

The method was developed based on the assumption that SMEs differ among themselves in the ways they contribute toward quality of life and sustainable development in their region. Further, our aim is to analyze the activities of a regional sector in order to make them visible for three groups: (1) the enterprises themselves, (2) the local community and (3) surrounding institutions. In doing so, we want to contribute toward developing broader political strategies for regional development, which thus far have been generally based on rather narrow monetary conceptions of wealth.

In order to describe the contributions of SMEs to society and the environment, we searched for an analytical framework that would help to operationalize this broad approach, choosing a concept of sustainable development that already contains most of the aspects commonly referred to in quality of life concepts (see Table I). We then found dimensions of quality of life that were not already part of the selected sustainability concept and added them to our analytical framework called ‚sustainable wealth' (see Section 2.1). The reason for doing so was our assumption that implementing a concept of sustainability at the regional level can be heavily supported by including questions of quality of life. In adding aspects of individual and collective quality of life we stress the *opportunities* provided by sustainable development for both individuals and society in addition to the limits that are implied by it. Referring to businesses, we do not concentrate only on aspects that assure that enterprises 'do no harm' to their natural and social environment, but also take the various activities into account that - to our opinion and knowledge - contribute toward improving individual and regional well being.

Since the analytical framework of 'sustainable wealth' is very broad it can be applied to various contexts such as nations, regions, different economic sectors, or projects of regional development. Yet, in order to apply it we have to operationalize it, using relevant criteria and indicators. In our case, we are investigating the organic agriculture and food sector in the Brandenburg-Berlin region of Germany. In order to narrow down the analytical framework for this specific application, we developed four research questions and defined areas of busi-

ness activity to be investigated (see Box 1). With the sustainability rules and the quality of life dimensions of our framework in mind, we then developed criteria and indicators for these four areas of research (see Section 2.2).

2.1 The analytical framework of 'sustainable wealth'[3]

Our framework for analyzing the societal activities of a regional sector is based on the concepts of quality of life and sustainable development in the following way.

Framework components of sustainability

Concerning our understanding of sustainability, we refer to the concept of Kopfmüller et al. (2001), which defines a set of objectives and basic requirements (rules) for sustainable development. However, we have slightly modified the definitions of one general objective and the corresponding rules in order to highlight the reproduction sphere of society. In particular, we did so by including the non-profit sector and the reproduction activities of households as important equivalents to the market-based production sector. These modifications are based on our broad understanding of the terms 'economy' and 'work', referring to the theoretical conceptions of some feminist economists (Biesecker and Hofmeister, 2000; Biesecker and Kesting, 2003). The result of these modifications is a set of 17 rules (see Table I). These rules are later operationalized through the development of criteria and indicators (see Section 2.2).

TABLE I

General Objectives and the Basic Requirements (Rules) of Sustainable Development

General Objectives	1. Ensuring human existence	2. Preserving the potential for production and reproduction[1]	3. Maintaining Development Potential
Rules	1.1. Protection of human health	2.1. Sustainable use of renewable resources	3.1. Equal access to education, occupation, and information
	1.2. Securing the satisfaction of basic needs	2.2. Sustainable use of non-renewable resources	3.2. Participation in societal decision making process
	1.3. Autonomous self-support	2.3. Sustainable use of the environment as a sink	3.3.Maintaining cultural heritage and cultural diversity
	1.4. Just distribution of access to the natural environment	*2.4. Preserving and supporting reproductivity of nature*	3.4. Maintaining cultural functions of nature
	1.5. Compensation of extreme differences in income and wealth	2.5. Avoiding unjustifiable technical risks	3.5. Maintaining social resources
		2.6. Sustainable development of the material conditions for production and reproduction[2]	
		2.7. Sustainable development of human potentials and knowledge for production and reproduction[2]	

Source: Kopfmüller et al., 2001, p. 172; modified and extended. Extensions of the HGF approach are printed in italics. [1]Original: preserving the production potential; [2]Original: Sustainable development of material, human and knowledge capital (ibid.).

Framework components of quality of life

Surveying the literature on conceptions of wealth, we found that the concept of quality of life largely overlaps with that of sustainable development in considering material and non-material, subjective and objective as well as individual and collective aspects (Noll, 2000). Referring to the concept by Allard (1993), we distinguish the following three spheres of quality of life: (1) the material sphere of 'having' (material wealth, availability of public goods), (2) the social sphere of 'loving' (family life, friendship, love, etc.) and (3) the sphere of personal development and self realization, labeled 'being' (learning, sense of life, participation etc.). In other conceptions, a fourth dimension, the 'societal sphere', is mentioned that is related to freedom, solidarity, justice etc. (Bulmahn, 1999; Canadian Policy Research Networks, 2001; Independent Commission on Population and Quality of Life, 1998; Krause and Habich, 2000).

Comparing these four spheres with the basic requirements for sustainability of Kopfmüller et al., we found that the chosen sustainability concept largely covers the quality of life spheres of 'having' and 'loving' as well as the 'societal' dimension (freedom, solidarity etc).[4] However it appears that aspects of the 'being' sphere (personal development and self-realization) are not constitutive parts of the sustainability concept. Yet, dimensions like availability of time, regional identity, and joy in living contribute toward quality of life without necessarily endangering the goals of sustainable development. Revealing these aspects may help to systematically identify options for realizing a 'good life' within the limits defined by the concept of sustainable development. Thus, we included these dimensions into our 'sustainable wealth' framework.

2.2 Developing the indicator set

The starting point for developing indicators on the activities of SMEs is our 'sustainable wealth' concept (as presented in Section 2.1). Our first step in applying this analytical framework to the organic food sector in the Brandenburg-Berlin region of Germany was to pose four research questions. These questions are based on a selection of those 'sustainable

wealth' aspects that are particularly relevant for both the sector and the region, while leaving out others of less relevance. The second step was then to search for adequate indicators by reviewing literature on indicator systems in different fields. The result of this survey was a large number of possible criteria and indicators. This set was reduced, in a third step, down to a manageable size through the involvement of experts from the organic agriculture and food sector. The three steps are described in detail on the following pages.

Posing four research questions

Our research questions are concerned with discovering the special contributions made by the organic agriculture and food sector to the Brandenburg-Berlin region of Germany. Information about the main difficulties the region and sector face comes from a survey of regional reports and from communication with regional stakeholders.

We assume that the sector is particularly strong in contributing to the following regionally relevant fields that provide the major focus of our research:

Box 1: Four research questions concerning the contributions of the organic agriculture and food sector in the Brandenburg-Berlin region toward 'sustainable wealth'

Does the organic agriculture and food sector in the Brandenburg-Berlin region …

(1) preserve and create knowledge about dealing with nature and health issues in a sustainable way (human potential)?

(2) preserve and create social potential and social resources?

(3) preserve and create non-material quality of life?

(4) contribute toward environmental protection and landscape aesthetics?

Related to our framework of 'sustainable wealth', contributions (1), (2) and (4) belong to the general sustainability objectives of 'preserving the potentials for production and reproduction of society' and 'maintaining the development potentials' (Table I), whereas contribution (3) represents the 'being' sphere of personal development and self realization, drawn from quality of life conceptions.

Developing the criteria and indicator set

We developed the criteria and indicator set based on a literature survey in the fields of quality of life, social welfare, social capital, corporate social responsibility, sustainable enterprise, sustainable agriculture and nutrition, and regional sustainable development. Based on the survey, we were able to identify many criteria and indicators that directly apply to our four areas of research (see Box 1), but also had to modify a number of them.

Most of our indicators describe business *activities* rather then regional *effects* for the following reasons: Firstly, activities can be analyzed relatively easily by carrying out a questionnaire-based business survey. Secondly, effects are very difficult to assign directly, since they often appear only after a long period of time. Thirdly, direct cause-effect relationships are also difficult to assign because we often find several regional actors involved in social and environmental activities (multiple causation) as well as a number of effects resulting from the activities (multiple effects). Lastly, enterprises can be compared more easily by their activities, and policy as well as business advice can be offered in a more direct way, when referring to activities. However, in order to draw conclusions about the regional effects, we chose to focus on those activities for which the link to their effects is either proven or highly probable.

In the following, we present selected criteria and indicators for fields (1) to (4).

(1) Human potential, in our understanding, includes human capabilities and knowledge that are necessary for leading a sustainable lifestyle. In contrast to the widely used understanding of human *capital*, we want to consider knowledge that can be used for market-based activities as well as experiences and knowledge that are necessary for reproductive activities *outside* the market, for example, for sustainable consumption and nutrition. This seems very important, since the literature on nutrition often states a lack of general knowledge in the fields of purchasing and preparing food in a sustainable way (Lorek, 2001; Claupin 2003, Erdmann 2003). Concerning the contribution of enterprises toward creating human potential, most of the indicators we found deal with training opportunities for employees and concentrate on formal ways of passing on knowledge (Federal Government of Germany, 2002;

CSD, 1996; Kopfmüller et al., 2001). We have included such indicators in our set, but we also wanted to study activities that help to spread knowledge and experience beyond the enterprises, to people in the local and regional community. Further, we have included informal ways of communicating information and experiences, because they seem to be an important complement to the spreading of cognitive knowledge (Clar et al., 1997). Thus, our criteria refer to activities of enterprises related to (a) providing education opportunities, (b) communicating knowledge and experience in informal ways, (c) supporting 'reflectivity', and (d) maintaining cultural heritage. Examples for informal ways of communicating information are open house days or guided tours; an example for 'reflective' activities is exchange regarding visions and ideas with other stakeholders in the region; and an exemplary activity to maintain cultural heritage is the production or use of rare plant or animal species. These indicators are used to operationalize the basic requirements defined in sustainability rules 2.7 and 3.3 (see Table I).

(2) Concerning the contribution of business to social resources, we again look at activities that are directed at the employees as well as those that are assumed to improve social resources in the local environment. Regarding the development of social potential within enterprises, we look at activities that allow employee or customer participation (e.g., possibilities for the employees to participate in business decisions or efforts to know more about customers' needs). Related to social capital and corporate citizenship, the engagement in or the support of non-profit organizations are important business activities that help to sustain the social infrastructure. Further, we look at business engagement in regional and business networks as well as at activities to support other organic enterprises. These items operationalize sustainability rules 3.2 and 3.5 (see Table I).

(3) We investigate contributions to *environmental and natural protection* that go beyond the standards of organic agriculture. We do this because there is already solid evidence about the fact that the production of food following the standards of organic agriculture helps to preserve natural resources such as soil, water, animal and plant species, and air quality

while using less energy than conventional agriculture, mainly because mineral fertilizer and synthetic pesticides are not used (FiBL, 2000; Köpke, 2002; Stokstad, 2002 etc.).

Thus, we focus on contributions that are assumed to arise from supplying renewable energy, avoiding emissions, reducing the use of energy and water, and maintaining appropriate conditions for animal and plant species. These activities can be summarized under the categories of sustainable use of renewable and non-renewable resources, sustainable use of environment as a sink, preserving re-productivity of nature, and avoiding unjustifiable technological risks, corresponding to sustainability rules 2.1 through 2.5. In addition, we look at the contributions of the industrial sector toward landscape aesthetics, which we assign to activities such as preserving habitats and species or creating new habitats (e.g., planting hedges or trees, installing buffer zones at water courses), corresponding to sustainability rule 3.4 (see Table I).

(4) The criteria presented so far already contain many dimensions that are usually part of the concepts of *quality of life*, such as education, participation, and environmental protection. In addition to that, we look at business contributions toward individual satisfaction with working conditions and income as well as individual perceptions about self-realization and joy in living derived from peoples' jobs. An aspect of collective quality of life that we derived from the literature is activities that support a sense of regional identity.

Collecting indicators to operationalize the four fields of interest of the survey lead to a set of 151 indicators altogether. Usually, a number of indicators are used to describe different aspects of one criterion.

Reducing the indicator set

So far, the indicator set has been developed 'top-down', that is, by the researchers of the project. Yet, in many processes for developing regional quality of life or sustainability indicators, such a top-down process of indicator development is combined with a participative 'bottom-up' process to select the most appropriate indicators in a given regional and industrial context (Canadian Policy Research Networks, 2001; Jacksonville Community Council Inc.,

2002; Kopfmüller et al., 2001; Seattle Community Network, 1995). Such a combination is expected to support the (unavoidable) valuation of criteria and indicators by including the perspectives of those under investigation about the relevance of individual criteria and indicators. Further more, discussions about the project's normative premises and goals, as well as explanations of the rationale for including certain indicators in the set may help to create acceptance for the survey amongst sector representatives.

Consequently, regional stakeholders from the organic food sector participated in the selection of the most relevant indicators in the following way. Altogether seven representatives of regional business associations from the organic agriculture and food sector and three managers/owners of regional enterprises (organic agriculture, food processing, and trade) were asked to vote on which of the suggested indicators would be most relevant or best suitable for describing the contributions of the sector toward quality of life and sustainability. Then, we discussed in a workshop why some indicators were voted to be more relevant than others. During the discussion, the participants mainly took two aspects into account: (a) whether the sector is able to make a useful contribution to the field concerned and (b) whether the regional situation requires this contribution.

This participative step allowed the reduction of the set down to 70 indicators without substantially losing complexity. Overall, the representatives acknowledged the broad approach of the project and identified important indicators in all four fields of research focus. However, the main responsibility of the sector was seen to be in contributing toward preserving natural resources.

During the selection process of the final indicator set, the research team followed most suggestions of regional stakeholders of the sector. Suggestions to discard indicators were only rejected if they would mean that indicators would no longer cover all of the four fields of research focus.

2.3 Transferability of the method and indicators

The organic agriculture and food sector is a rather special industrial sector that in some respects is not very typical of the majority of SMEs. We therefore want to add some remarks concerning the special characteristics of the sector and the transferability of the method and indicators developed for studying it.

First, it doesn't seem to be common to categorize farms under the term "small and medium enterprises", probably because it is a rather special form of production Since farmers are, however, dealing directly with natural resources (soil, water, plant and animal species, etc.) and are, moreover, shaping the landscape, it seems especially important to include them in analyses dealing with means of providing sustainable goods and services. Yet, in the development of suitable indicators, the special role of agricultural enterprises also has to be taken into consideration; it is not sufficient, for example, to simply apply the commonly used indicators on environmental management to them. Processing and trading enterprises, on the other hand, commonly *are* categorized as "SMEs".

The *organic* agriculture and food sector is also different from "normal" SMEs because it has committed itself to rather high standards concerning the ecological aspects of the production and processing of food. Concerning the ecological dimension, it is therefore a potential "best-case group", which could serve as a model for sustainable development of the whole agricultural sector. The goal of the project "Regional Wealth Reconsidered" is to gain additional information about the performance of the sector in other dimensions (see Box 1).

In speaking about the transferability of the method, we have to differentiate between two aspects: a) the methodological steps and b) the research questions, criteria and indicators.

Concerning the *methodological steps* – posing context-related research questions, development of a literature-based criteria and indicator set, and participatory reduction of the indicator set – we think that they can be successfully applied to other economic sectors, development projects, and so on.

The *research questions* (Box 1) developed seem to represent four essential foci related to the analysis of entrepreneurial corporate social responsibility; however, the weight that is put on each of them may vary according to the sector and/or region concerned. The focus on landscape aesthetics is, for example, specific to the analysis of a sector that contributes toward the actual development of landscapes. The *criteria* chosen to operationalize the research questions should by and large be transferable to other sectors: formal and informal ways of spreading knowledge, supporting reflectivity and cultural heritage, as well as the issues of participation, engagement in NGOs and networks, and the strengthening of social resources are not sector-specific but rather reflect a broad perspective that could be applicable to a number of sectors. Although the contributions that each sector can make toward achieving ecological goals may vary widely, the criteria for sustainable use of renewable and non-renewable resources, sustainable forms of dealing with emissions, preservation of the reproductivity of nature, and avoiding unjustifiable risks are, however, of general importance. We come, therefore, to the conclusion that it is mainly the *activities* of each sector — those which presumably contribute to the defined goals — that are likely to be rather different if we look at the textiles, communications, or energy sector. Consequently, the set of indicators has to be adapted for each context.

3 Contributions of the organic agriculture and food sector in the Brandenburg-Berlin region (Germany) toward 'sustainable wealth'

Before presenting preliminary results from the application of the indicator set, we will briefly describe the historical development and structure of the organic agriculture and food sector while introducing our study sample.

3.1 Overview of the organic agriculture and food sector in the Brandenburg-Berlin region and the study sample

The Brandenburg-Berlin region consists of the agglomeration Berlin (3.2 million inhabitants), which for forty years was divided into East and West Berlin but is now the German capital, and the surrounding rural area of Brandenburg, with a low population density, few industrial structures, and a rather high percentage of state-protected areas. In the former German Democratic Republic (GDR, called 'East Germany' in the following), agriculture was mostly organized in rather large cooperatives of several thousand hectares (ha) of state-owned land. Only very few small farms practiced organic agriculture; and it was not at all possible to buy organic food. With the German unification, the agricultural sector in East Germany had to adapt very quickly to conditions in the European Union. Because subsidies were given to businesses carrying out organic food production, the transformation to organic agriculture was an attractive option for cooperatives and farms, especially for those on low-quality soil.

The number of organic farms in East Germany grew rather quickly in the last decade; in Brandenburg there are 577 organic farms today, working on 8.8 percent of Brandenburg's total agricultural land. We can observe a new type of organic farm in East Germany, characterized by a higher average size in comparison to farms in West Germany (158 ha and 29 ha, respectively) and a higher portion of products sold outside the region on national or international markets.[5] There are around 170 food processing enterprises in the region, 70 of them being located in Berlin. Most of them process fresh products like grains, milk, meat and fruit. However, the level of processing is rather low. Almost no firms in the regional organic processing industry sell outside the region. All companies are SMEs, the majority of them being bakeries.

Concerning the distribution of organic food products, before the unification West Berlin already had a broad variety of shopping facilities. Today we find approximately 200 natural food stores, health stores and bakeries in Berlin selling organic food only. These products can also be bought in health stores, at open markets and in supermarkets. In rural Brandenburg, the consumption of organic food is rather low and growing slowly due to the low income of the population, few facilities where these products can be bought and slowly changing attitudes towards the value of healthy and environmentally sound food. There are about 45 organic stores in the Brandenburg region.

In our survey, all of the organic companies in Brandenburg-Berlin were contacted by mail and asked to fill out a questionnaire. Our resulting sample consists of 202 farms, 47 processing firms, and 83 retail stores, most of them being small enterprises with less than 10 employees (92 percent of the farms, 51 percent of the processing firms and 87 percent of the stores). Only 11 percent of our processing industry sample have more than 50 employees.

Farms, processing firms, and stores are each represented about equally in the sample, which itself consists of about a third of the total number of existing firms for each category (see Table II). Concerning company size, our sample of farms is very similar to the complete group of organic farms in the region. However, the sample contains slightly less farms that are organized in organic farm associations, compared to the total of such farms in Brandenburg (53% in sample, compared to 58% in total). Since no statistical data is available on the organic food processing and retail sectors in the region, we included about equal numbers of both small and medium-sized enterprises as well as the whole range of products produced in the region. Altogether, we conclude that our sample allows for relatively reliable estimates concerning the total number of organic enterprises in the Brandenburg-Berlin region.

TABLE II

General structure of the organic agriculture and food industry in the Brandenburg-Berlin region (Germany) and study sample

Sector	Number of companies in Brandenburg-Berlin region	Number of companies in study sample	Percentages (%)
Organic agriculture	about 580	202	35
Organic food processing	about 170	47	28
Retail industry for organic food	about 250	83	33
Total	about 1000	333	33

3.2 Selected results

Most of the indicators that we developed were included in the questionnaire, the rest of them being derived from public statistics[6]. In the remainder of this section, we present some results of the questionnaire-based survey related to our fields of research (1) to (4) (see Section 2.2).

(1) Passing on knowledge and experience

The sector carries out various internal and external educational measures and informal activities (see Figure 1). In our opinion, these activities can be seen as contributing toward the 'formal' education of people in the region, especially in rural areas. Additionally, they help in 'building bridges' between city and countryside and strengthening the regional identity perceived by the region's inhabitants.

Our results show that more than 60 percent of the organic food processing and retail enterprises offer training measures for their employees while 30 percent are active in further education for young people (see Figure 1). Organic farms do both to a lesser extent.

A rather high percentage of managers in the sector discuss their visions and goals with other stakeholders, both formally (in organic associations) and informally.

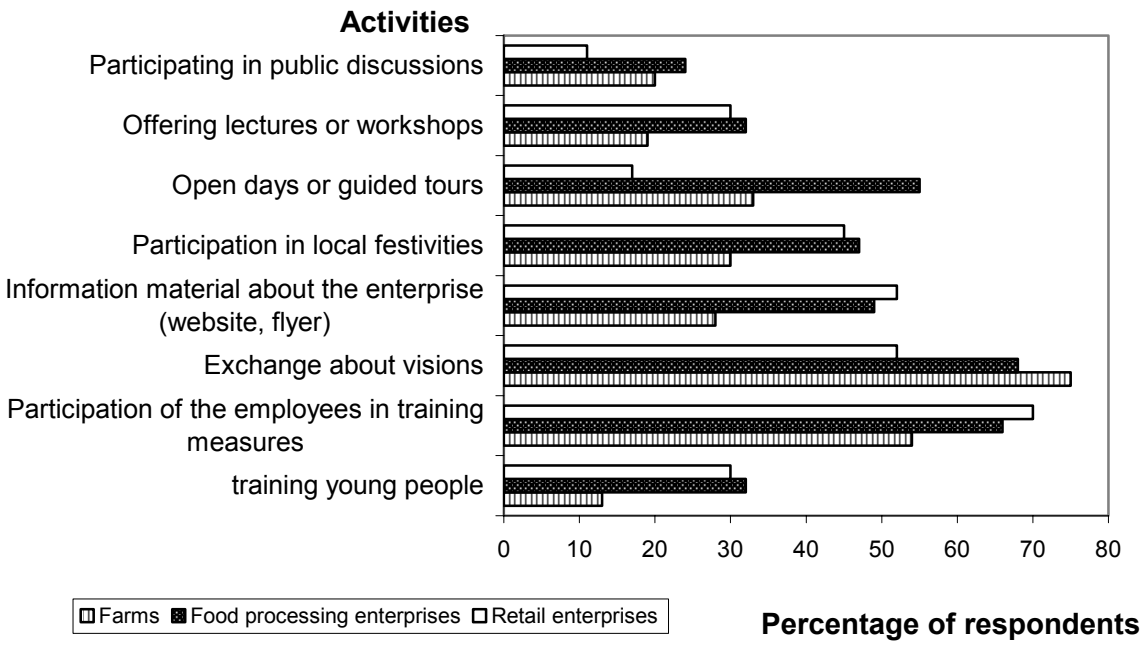

Figure 1. Activities of passing on knowledge and experience

About 53 percent of the firms communicate with the public on *additional* topics besides advertising. Half of the enterprises maintain contact with their customers and the local community through activities such as open house days, guided tours, participating at local or regional events, or offering informational material. Approximately one fifth offer workshops or lectures or participate at public discussions (see Figure 1). While the farms and the processing enterprises mainly communicate topics of organic agriculture and social concerns, retail enterprises focus additionally on themes concerning health, nutrition and genetic manipulation. One fourth of all enterprises refer to regional questions. Altogether, organic food processing enterprises seem to be especially active in passing on knowledge and experience, while only a relatively small fraction of farms exhibit such activities.

(2) Preserving and creating social resources

Our results suggest that the sector is not outstanding with regard to the social aspects of the prevailing working conditions. Overall, one fourth of the respondents offer special benefits to

their employees such as flexible working hours or additional retirement benefits. Only the processing enterprises are active in this field, with almost half of them offering special social benefits (see Figure 2).[7] About half of the managers in processing and retail enterprises, and one third of the managers of farms, are women. Altogether, about 49 percent of the employees in our sample are female. Women are represented with the highest percentage in the retail enterprises (71%), followed by the processing enterprises (49%) and the farms (37%).

Both agricultural and processing enterprises are rather active in supporting other regional enterprises (more than 45%). This includes support with machines, raw materials, fodder, or financial aid (loans with low interest rates, delay of sending out bills, etc.). The 'solidarity' of retail enterprises seems to be lower. More than 60 percent of the responding food processing and retail enterprises claim that they make efforts to know more about the needs of their clients, mostly by directly talking to them, sometimes by questionnaires or by offering facilities for customers to write down and drop off suggestions or complaints. Only 29 percent of the farms offer such opportunities, often because they do not have direct contact to the consumers.

Overall, the sector is rather active with regard to the 'classical' activities of corporate social responsibility: supporting non-profit organizations through financial aid or material support (about 60 percent) and, to a lesser extent, by being active in regional non-profit organizations, such as associations, initiatives, and grass-roots movements (about 36 percent; see Figure 2). Various non-profit organizations, such as environmental and organic associations, natural parks, movements for zones without genetically manipulated organisms, and initiatives for sustainable regional development are mentioned by farmers. In rural areas, these activities are generally seen as being helpful toward stabilizing the social infrastructure, forming the basis for future development. The sector's activities assumed to be contributing toward social resources are summarized in Figure 2.

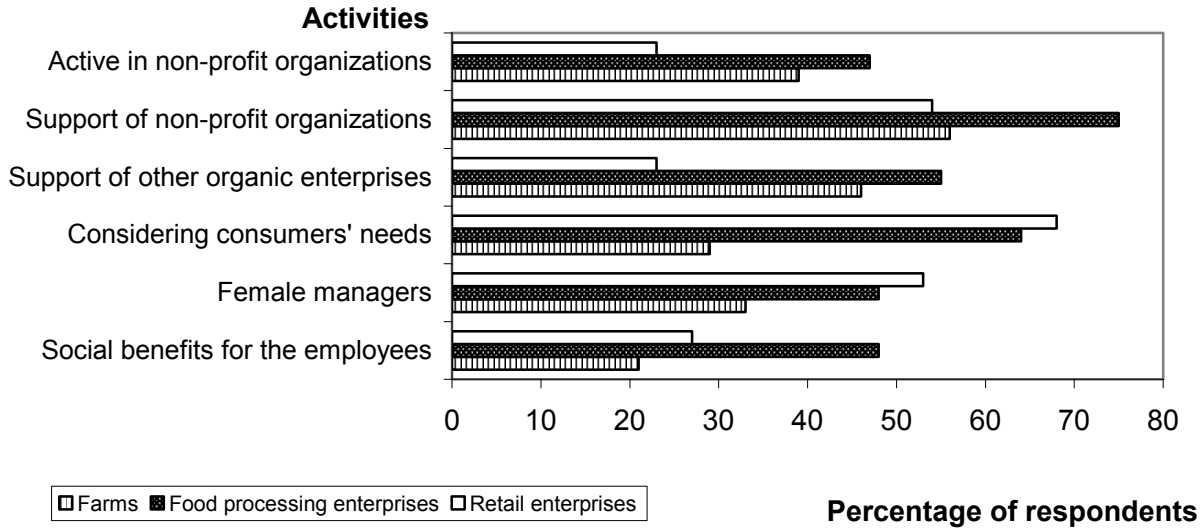

Figure 2. Social Activities

(3) Non-material aspects of quality of life

Managers and employees of the sector were asked about how satisfied they are with their jobs and working conditions.[8] Our results show that income satisfaction is not homogeneous: only 26% of the managers are content or very content with their income. Self-realization however seems to be fulfilled in most cases: around 80 percent of the managers overall (in all three types of enterprises) are satisfied with their work and claim that it contributes to their personal joy in living (see Figure 3). Around 45% of the managers, however, claim that they often feel stressed.

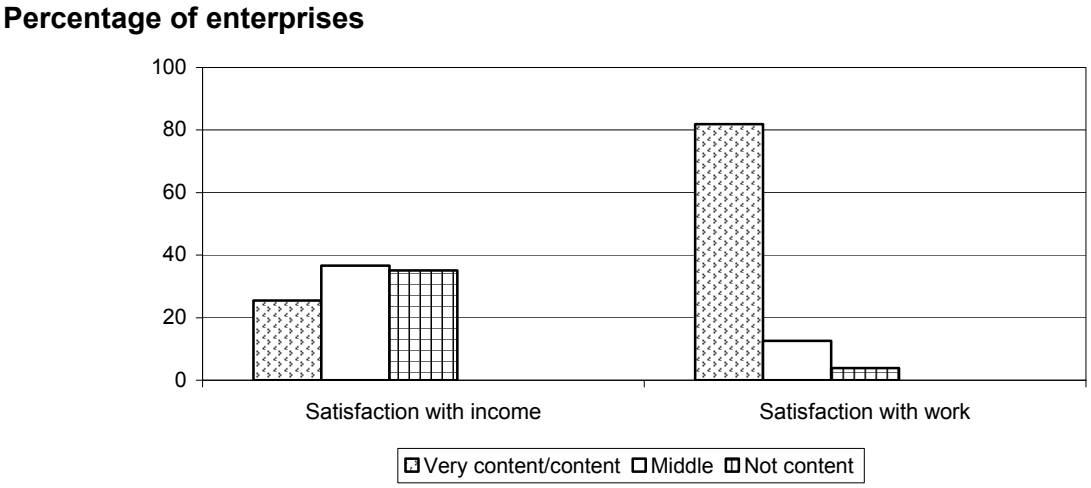

Figure 3. Satisfaction with income and work

(4) Environmental protection and contribution to landscape aesthetics

Opportunities for ecological activities vary greatly amongst the three categories of 'organic' enterprises (farms, food processing and retail). Therefore, we asked them different sets of questions.

The results show that food-processing enterprises tend to focus on activities for saving water (45 percent) and energy (62 percent) and reducing their emissions (35 percent). About 13 percent of these enterprises generate renewable energy and 26 percent carried out environmental audits. About 40 percent of the farms claim to save water and energy, and 21 percent generate energy from renewable resources. More than a third of the agricultural enterprises preserve soil fertility, whereas about 60 percent protect habitats and species. The latter seems to be especially important for a majority of the farmers. To enhance structural diversity, hedges and trees are planted, biotopes are cultivated, and 'buffer zones' beside watercourses are installed. Additionally the farmers are cautious in the way they work on their fields with regard to the protection of certain species (e. g., time and type of mowing).

With such activities, we believe that the organic agricultural sector can be seen to be contributing considerably to diversity and landscape aesthetics in a region that is dominated by large-scale agriculture and, at the same time, containing a high percentage of natural preserve areas. Almost one third of the farmers and food processing firms work with some almost extinct plant or animal species and, in this way, help to preserve genetic diversity. Figure 4 gives an overview of ecological activities of organic farms and food processing firms. Since retail companies have fewer opportunities for ecological measures they are not included in Figure 4. 25 percent of them buy renewable energy and almost 90 percent claim to use environmentally sound products, for example, for cleaning purposes.

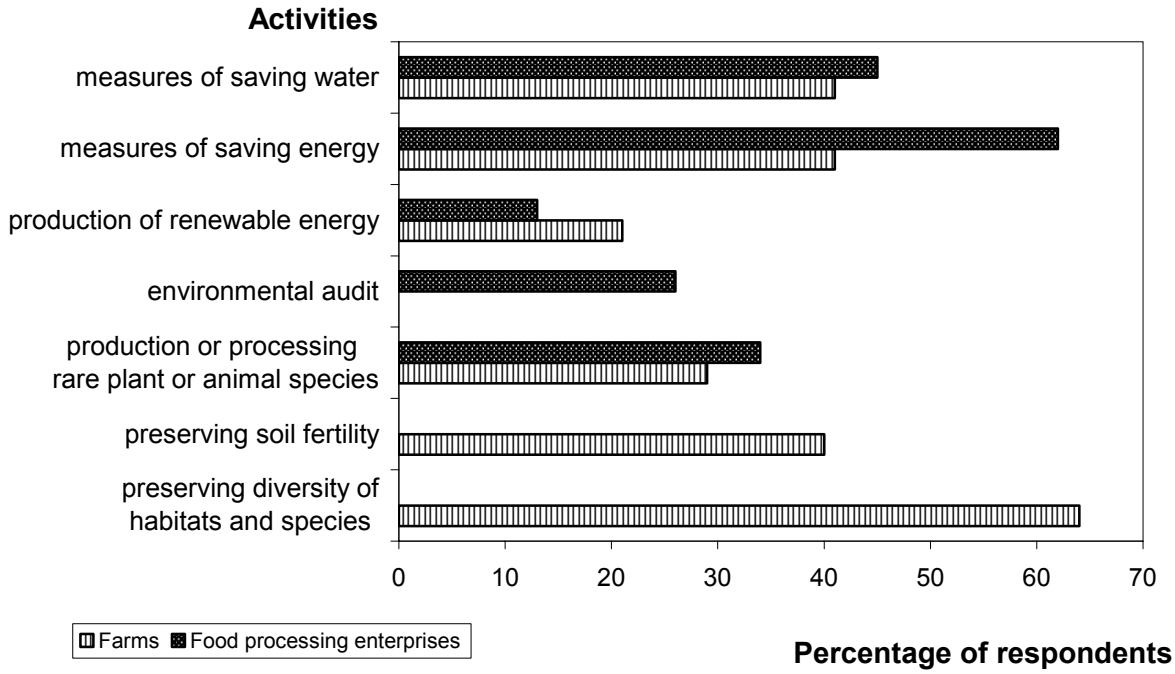

Figure 4. Ecological activities and contribution to landscape aesthetics

4 Summary and conclusions

The method developed by us for analyzing the contribution of a regional industrial sector toward sustainable development and quality of life has generated useful information on the activities of the selected sector related to society and the environment. The results suggest that it is worthwhile to look more closely at the societal activities of SMEs, which still represent 'the backbone' of European societies.

Using the concepts of sustainable development and quality of life and developing the framework of 'sustainable wealth' has helped us to maintain a broad perspective throughout the analysis. They were also important ingredients for formulating our context-related research questions. Furthermore, adding dimensions from the sphere of personal development and self-realization to our 'sustainable wealth' framework has helped in obtaining a better picture regarding qualitative aspects of work (e.g. self-fulfillment) in this sector. Moreover, the analysis  applied a particular perspective in paying attention to activities that have yet to be adequately acknowledged. It does seem, however, that the complementary study of non-market entrepreneurial activities, informal ways of spreading knowledge and experience, and activities that strengthen regional identity, etc. can be helpful toward gaining understanding of the role of SMEs in regional sustainable development. These aspects, however, need to be analysed in more detail in further case studies.

For analyzing SMEs, the analysis of activities seems to be a more useful approach than analyzing management systems, codes of conduct, formal responsibilities, etc. Also, beginning the analysis on the business level (with the questionnaire) and later aggregating the data for the entire sector has proven to be very helpful.

The focus on activities has the disadvantage that no conclusions can be derived about the actual *effects* of entrepreneurial behavior. Thus, while some cause-effect relationships may be taken as given, (e.g., the link between maintaining biotopes and higher variety of species, the link between training activities and human potential, or the link between engagement in non-profit organizations and social resources), other aspects cannot be explored as easily (e.g., the effects of informal ways of spreading knowledge and experience).

However, the information available about these activities suggests that effects can be assumed. In out project, we accepted the disadvantages of focusing on activities while considering the advantages, e.g. concerning data collection (see Section 2.2).

The following findings summarize the kind of information we were able to generate by using our method, much of which refers to potential effects of the sector, derived from its activities (rather than actual effects). Overall, the sector has the capacity to contribute toward regional quality of life and sustainable development in all of our four fields of investigation (human potential, social resources, non-material aspects of quality of life, environmental protection and landscape aesthetics). However, the contributions can vary greatly between the three groups (organic farms, food-processing industry and retail sector).

Concerning the creation of human potential, the organic agriculture and food sector in the Brandenburg-Berlin region is rather active in communicating about issues such as environmentally sound agriculture, healthy nutrition, the quality of manufactured products, the risks of gene manipulating techniques. In doing so, it can contribute to developing a 'sustainable food culture'. In rural-urban regions like Brandenburg-Berlin, the sector can also play an important part in 'building bridges' between city and rural areas, allowing people from the city to observe and experience food production and processing activities while gaining a sense of regional identity.

Especially in rural regions with little industry, SMEs of the organic agriculture and food sector can play an important role in sustaining social resources, serving as 'start-off points' for regional development. The networks we have found, link actors of the food producing and processing sector with actors from a variety of other business and non-profit sectors (e.g., tourism, gastronomy, production of renewable resources, landscape preservation, health or wellness institutions, educational institutions). Within these networks, a variety of projects regarding regional development between different actors are being planned and realized.

Having started off as an 'ecological movement', the organic agriculture and food sector can contribute toward environmental protection through efficient use of resources and environmentally-sound management. Further, organic farms in the investigated region are

very active in cultivating an aesthetically attractive landscape through the preservation of habitats and species. In addition, the sector can contribute to individual self-realization and joy of life by supplying satisfying work to those working in it.

The study results also show that the sector is not homogenous and that not all businesses are equally active in all investigated fields. Further analysis will show whether we can identify types of enterprises with a focus on certain activities. These findings should help in the design of policy measures directed at the sector and the region's development as well as to support the sector's contributions toward quality of life in the region and sustainable development more than it has been doing until now.

NOTES

[1] The reason for this may be that SMEs are directly oriented at what their individual customers expect them to engage in and how their engagement can be tied to their own business interests, whereas large firms are rather motivated to improve their general public image (Institut für Mittelstandsforschung Bonn, 2002)

[2] The project 'Regional Wealth Reconsidered. The Contribution of the Organic Agriculture and Food Sector toward Quality of Life' is carried out in co-operation between the Centre of Technology and Society of the Technical University Berlin and the German Institute for Economic Research, Berlin. It is funded from 2002 until 2007 by the German Ministry of Education and Research within its 'Social-Ecological Research Program'.

[3] The concept of sustainability we refer to and our understanding of wealth are described in more detail in Schäfer et al., 2004.

[4] Yet, sustainability also means more than quality of life by including the normative idea of ensuring the ‚rights' of future generations.

[5] The latter development is due, in part, to the fact that the organic processing industry has not grown as quickly as the organic agricultural sector.

[6] However, in order to get a full impression of the sector's contributions toward quality of life and sustainability, in a later stage of our project, qualitative indicators identified through case studies of approximately ten firms will supplement the quantitative results. In these qualitative interviews with directors of the enterprises and employees, we intend to learn more about the motivation for their engagement, synergies and conflicts between the activities that are carried out, and supportive or inhibiting conditions.

[7] However, it has to be taken into consideration that the working hours in the agricultural sector are seasonal.

[8] In the questionnaire, we had to focus on the managers, but in the case studies we will also interview employees.

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