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## **ECO-BALANCED SCORECARD AS A SUPPORTING TOOL IN EMAS SYSTEM<sup>1</sup>**

**Abstract:** Nowadays, one of a company's priorities is to build its image as responsible and environmental-friendly. Environmental management systems such ISO 14001 or EMAS (Eco-management and Audit Scheme) are tools that help organizations in creating such a picture. Implementing abovementioned systems enjoys popularity since the mid-90s. However, in some organizations, implemented systems suffer problems, and consequently, they are not as effective as expected. In many cases, systems are run at the operating level and often are not sufficiently linked with strategic management and planning. Integration of environmental objectives into the organization's strategy plays a significant role and may be provided by using the widely-known tool BSC (Balanced Scorecard), modified for environmental use. The aim of this article is to present examples of the integration of organizations' environmental objectives with four BSC perspectives. Researches are based on case study analysis obtained from secondary data sources (organizations' environmental statements). Results indicate that the most environmental objectives are posed in the area of internal processes, and the least in the area of finance. Additionally, it has been noted that there is a disproportion between the number of operational objectives and management objectives, which confirms that many environmental management systems are run at the operating level.

**Keywords:** environmental aspects, eco-management and audit scheme, environmental management system, environmental performance indicators, balanced scorecard, environmental reporting.

**JEL classification:** L15, L21, Q51.

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## ŚRODOWISKOWA ZRÓWNOWAŻONA KARTA WYNIKÓW JAKO NARZĘDZIE WSPIERAJĄCE W SYSTEMIE EMAS

**Streszczenie:** Obecnie jednym z priorytetów przedsiębiorstw jest budowanie własnego wizerunku jako firmy odpowiedzialnej i przyjaznej dla środowiska. Systemy zarządzania środowiskowego, jak norma ISO 14001 lub rozporządzenie EMAS (system ekozarządzania i audytu), to narzędzia, które mogą pomóc organizacjom w budowaniu takiego właśnie obrazu. Wdrażanie wymienionych systemów zarządzania cieszy się popularnością od połowy lat 90. Niemniej jednak w niektórych organizacjach wdrożone systemy napotykały problemy, wobec czego nie są tak skuteczne, jak się spodziewano. W wielu przypadkach są one prowadzone na poziomie operacyjnym i często nie są dostatecznie związane z zarządzaniem i planowaniem strategicznym. Integracja celów środowiskowych ze strategią organizacji odgrywa znaczącą rolę i może być dokonana za pomocą powszechnie znanego narzędzia Zrównoważonej Karty Wyników (BSC – *Balanced Scorecard*) zmodyfikowanego dla celów użytku środowiskowego. Artykuł ma na celu przedstawienie przykładów integracji celów środowiskowych organizacji z czterema perspektywami BSC. Badania zostały przeprowadzone na podstawie analizy studiów przypadków (*case studies*), na podstawie wtórnych źródeł danych (deklaracje środowiskowe organizacji). Wyniki wskazują, że najwięcej celów środowiskowych stawianych jest w obszarze procesów wewnętrznych, a najmniej w obszarze finansów. Ponadto zauważono dysproporcję pomiędzy liczbą celów operacyjnych i celów zarządczych, co potwierdza, że wiele systemów zarządzania środowiskowego prowadzonych jest na poziomie operacyjnym.

**Słowa kluczowe:** aspekty środowiskowe, system ekozarządzania i audytu, system zarządzania środowiskowego, wskaźniki efektów działalności środowiskowej, zrównoważona karta wyników, raportowanie środowiskowe.

## Introduction

Not only do the largest corporations in the world promote the trend of building an environmental-friendly image, but it is also pushed by the increasing environmental awareness of consumers. Offering high quality products is no longer enough. Companies are using pro-environmental trends to gain consumers' favour and build their public image – the image of a company that cares not only about profits, but also about environmental issues. Environmental management systems (EMS) running at the operational level usually are not connected enough with strategic objectives and strategic planning. Consequently, actions in the environmental area are often inef-

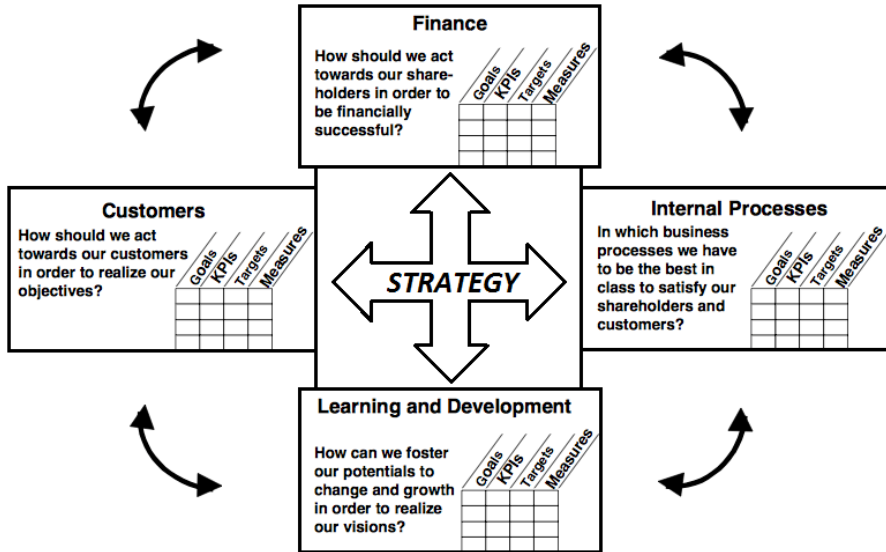
fective. Research indicates that appropriate strategic planning, management commitment and the positive impact of the EMS on the results and profits of organization are crucial factors for successful implementation and effectiveness of the system [del Brio *et al.* 2001].

Integration of the environmental objectives indicated in environmental statements and programmes into the organization's strategy is an important area and is vulnerable as well. The paper consists of four parts. In the following section, there is a brief presentation of the general BSC structure and use. The second part of the article describes possibilities to use BSC in environmental issues. Then, we present the research methodology and used materials. Finally, in part four, we describe the results and present discussion. The article closes in conclusions and directions for possible future research.

## 1. Balanced scorecard

The Balanced Scorecard (BSC) is a management tool developed by Kaplan and Norton that allows organizations to monitor their performance, organizational goals and strategic objectives [1996]. A widely known BSC approach makes it possible to monitor the aspects of an organization's activities that have an impact on future success and allows specifying a purpose that goes beyond the area of financial planning. It is based on four main perspectives [Figge *et al.* 2002; Moller and Schaltegger 2005; Epstein and Wisner 2001; Bieker 2008; Sidiropoulos *et al.* 2004], as shown in Figure 1:

1. The financial perspective is focused on stakeholders' interests and indicates connection between strategy and economic success measured by financial indicators.
2. Customer perspective is focused on customers' requirements, needs and satisfaction. It defines strategic objectives to create customer value and increase market share.
3. Internal business processes' perspective is focused on the performance of key internal processes.
4. The perspective of learning and development (growth) is focused on organizations' employees (qualification, motivation, goal orientation) and infrastructure (information system), which are crucial to achieve objectives for the above-mentioned three perspectives.



**Figure 1. The balanced scorecard methodology**

Source: Adapted from: [Kaplan and Norton 1996]

Each perspective must contain specific and appropriate goals, indicators and measures (initiatives, tasks) derived from an organization's vision and strategy [Kaplan and Norton 1996]. In all four key perspectives, the BSC contains set of Key Performance Indicators (KPI) [Moller and Schaltegger 2005]. Correctly identified, the KPI should comply with the general principles: should relate to the organizational goals, be measurable and be the key to success [UNIFE 2011]. Properly established KPI must be compatible with the SMART method (specific, measurable, achievable, relevant and time related) [Lawor and Hornyak 2012]. For KPI, several issues must be defined: calculation formula, measurement unit, reporting period, form of results presentation, data sources, and the person responsible for data collection, KPI owner [UNIFE 2011]. The analysis itself is not sufficient. Indicators obtained from analysis must be subjected to interpretation.

## 2. Environmental use

During the United Nations' Word Conferences (1972 – Stockholm, 1992 – Rio de Janeiro, 2002 – Johannesburg), a set of declarations and initiatives

were agreed upon. But the ongoing debate is about how businesses can contribute to these sustainable objectives while keeping economic and financial goals at the same time (profitability, growth, market value etc.) [Sidiropoulos *et al.* 2004]. At the very beginning, the sustainable development was related only to environmental issues in relation to economic progress, but later a third aspect (social) was added. Currently, “sustainable development” means meeting all three dimensions simultaneously: economic, environmental and social [Figge *et al.* 2002].

To achieve sustainable goals, along with a growing importance, many firms have implemented EMS or CSR (Corporate Social Responsibility) systems. However, from a practical point of view, corporate sustainability systems concerning environmental and social performance often suffer insufficient top management involvement [Bieker 2002]. Moreover, such systems are rarely integrated with the corporate general management system, which is a major challenge for the future development of such systems [Figge *et al.* 2001, 2002]. Using BSC for environmental and social performance measurement is one way to connect sustainability performance to the company’s strategy [Epstein and Wisner 2001].

The traditional BSC is often modified. Adding the sustainability perspective (economic-environmental-social) to the four main perspectives of the traditional BSC gives co-called SBSC (Sustainable Balanced Scorecard). Adding only environmental aspects to the four traditional perspectives gives Eco-BSC (Eco-balanced Scorecard) [Bieker 2008; Dias-Sardinha and Reijnders 2005; Sidiropoulos *et al.* 2004]. Modified BSC can be used as a supporting tool in environmental management systems (EMS or EMAS) to help organizations in evaluation of effectiveness and efficiency of its proceedings in the context of environmental goals. Integrating environmental and social aspects into BSC is usually based on the three most common integration scenarios [Figge *et al.* 2002]:

1. Including environmental (ecological) or social aspects into four existing BSC perspectives like other strategically relevant aspects. This approach causes social and environmental aspects to be automatically integrated into BSC.
2. Adding the fifth non-market perspective (eco-social-perspective) to the four basic perspectives.
3. Implementing an independent environmental or social balanced scorecard. It is important that this individual Eco-BSC or SBSC cannot be isolated from the conventional BSC; it must be integrated with the whole overarching BSC system.

Each perspective of the SBSC or Eco-BSC requires establishing goals, measures and performance indicators, which is not simple at all and may be time-consuming [Bieker 2008]. In order to properly diagnose and determine the environmental performance indicators, organizations may use the ISO standard *Environmental management – Environmental performance evaluation – Guidelines* [ISO 14031:2013], but the final set of indicators in each organization or business unit should be chosen individually and must reflect the culture, strategy, mission, policy and goals of the organisation [Epstein and Wisner 2001].

### 3. Material and methods

Research was conducted in the fourth quarter of 2014 and the first quarter of 2015. The study covered the analysis of secondary sources (desk research). The most important advantage of using secondary sources is saving time and cost of research [Churchill 2002]. Research was carried out on the group of companies in Poland, which had implemented and still maintained the EMS according to EMAS (Eco-management and Audit Scheme). Analysed secondary data included EMAS reports collected and archived by the Polish General Directorate for Environmental Protection<sup>2</sup>. During the study period, 45 organizations were recorded in the Polish EMAS register. Environmental reporting is obligatory for EMAS registered companies, which is taught as a major step toward transparent business [Regulation (EC) 2009]. For the purposes of this article, we have used organizations' obligatory environmental statements and the updated environmental statements, which include:

1. Description of the organization's EMS and environmental policy.
2. Description of the direct and indirect environmental aspects.
3. Description of the environmental objectives and targets.
4. Data on the performance of the organization in relation to its environmental objectives and targets.

According to Clausen, Keil and Jungwirth [2002], EMAS combined with SBSC can play a major role in establishing a sustainability perspective for companies. The purpose of this study is to find out if sustainable indicators and goals appear in EMAS reports (environmental statements), which

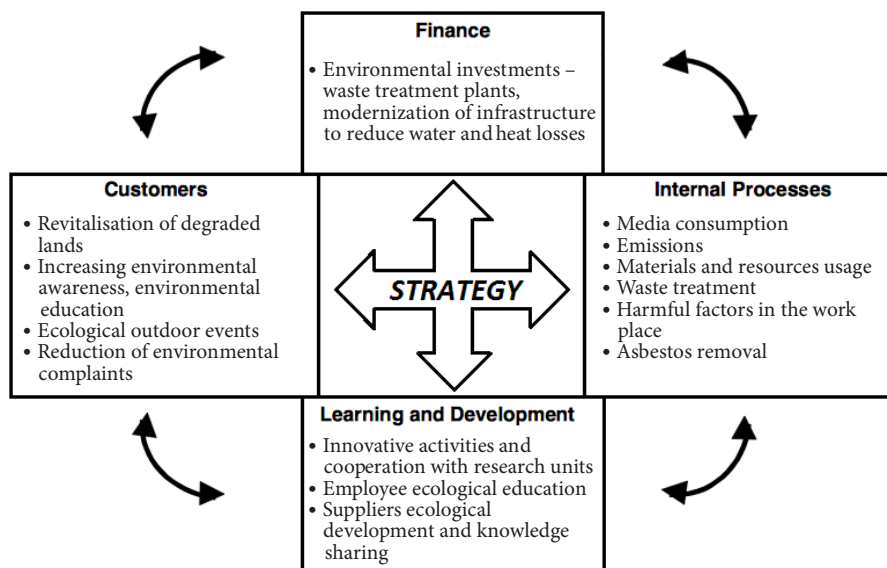
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<sup>2</sup> General Directorate of Environmental Protection is a polish competent body which lead and supervise EMAS register of companies that have implemented EMAS system <http://www.gdos.gov.pl>.

may be classified as one of four BSC perspectives. The case study was limited to researches on environmental indicators (social indicators were not included in the analysis). A case study was performed on a group of all 45 organization registered in EMAS during the study period. This study used qualitative research and not quantitative.

## 4. Results and discussion

After a detailed analysis of EMAS statements, we assigned environmental objectives indicated in reports to specific BSC perspectives. Results are indicated in Figure 2.



**Figure 2. Goals indicated in EMAS reports**

Source: Based on carried out case studies – EMAS statements analysis

The vast majority of objectives and indicators appeared in the group of **Internal Processes**. In these perspectives occurred indicators related to: media consumption (water, energy, compressed air, etc.), emissions (greenhouse gases, dusts, etc.), materials and resources usage (fuel, oil, natural gas, argon, carbon dioxide, packaging, batteries and accumulators, etc.), waste treatment (sewages, waste water, solid waste, hazardous waste gen-

eration, recycling, recovery and disposal of wastes), harmful factors in the work environment (noise, vibrations, ionizing and electromagnetic radiation, etc.), and asbestos removal. A large number of indicators in this group is not surprising, since EMAS strictly requires monitoring indicators in six fields (water consumption, energy consumption, wastes generation, material consumption, emissions and biodiversity) [Regulation (EC) 2009].

In the field of **Learning and Development**, many organisations pay attention to cooperation with research units (research institutions, universities, etc.) in order to provide the development of pro-environmental technology. Companies conduct innovative initiatives from both sources of funding: internal (their own) and external (public). Innovations are often aimed to product development (LCA analysis, product with reduced carbon footprint, etc.). One organization indicated that they participated in the work on the revision of EMAS reference documents (BREF<sup>3</sup>) on Best Available Techniques (BAT). In the perspective of learning and development, an environmental education and awareness plays a great role. Organizations provide environmental trainings for employees and put objectives concerning ecological development of suppliers (e.g. the number of EMS implementation by suppliers, taking into consideration the suppliers' environmental performance during their authorisation and periodic evaluation, suppliers' audits on EMS, eco-leaflets for suppliers and subcontractors, eco-surveys, and sharing knowledge during conferences and industry seminars). Some environmental objectives are about the IT infrastructure development (particularly replacement of office equipment for less energy consuming and the transition to electronic documentation).

In the **Customer** perspective, the most frequently occurring objective was the revitalisation of degraded lands (e.g. redevelopment of brownfield and degraded areas, reclamation of land from the demolished installations, increasing green areas, etc.). Besides this, organisations put an objective to increase customers' and society environmental awareness. In educational activities appeared the education of children, teenagers and adults; educational programs for schools; the promotion of environment-friendly activities; the organization of outdoor events, Earth Day, Ecological Festival, competitions, and eco-picnics; collecting electrowaste, promoting rational usage of environmental resources among clients; and education and information boards.

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<sup>3</sup> BREFs – Best Available Techniques Reference Documents – requirements resulting from the BREFs are guidelines and are not legally compulsory, but the authorities take them into account when issuing permits.

**The Financial** perspective turned out to have the least strategic objectives and indicators related to the environment. Determined objectives were related primarily to environmental investments (e.g. building waste treatment plants, modernizations of infrastructure to reduce water and heat losses).

During the analysis, it was noted that there is a clear disproportion between the amounts of goals set up in each group. The most objectives are in the group of Internal Processes, and the least in the Financial perspective, which confirms that the majority of environmental management systems are functioning at the operational level. Moreover, the Financial perspective plays a minor role in environmental strategies, which is also associated with the fact that organizations generally do not calculate their environmental costs and benefits (about 85% of EMAS registered organizations indicated in separate research that they do not calculate costs and benefits of environmental practices) [Szyszka and Matuszak-Flejszman 2013]. For the financial assessment of EMS, an ISO 14051:2011 standard (Environmental management – Material flow cost accounting – General framework) may be used. A set of financial indicators was also proposed by Epstein and Wisner [2001] (e.g. environmental saving, fines/penalties, environmental costs in % of sales, % proactive vs. reactive expenditures increase in relative % of proactive expenditures, capital investments, revenues from green products, and cost avoidance from environmental actions).

Finally, not all environmental objectives were presented as indicators (with calculation formula, regular counting period, trends shown in the graph or table). The majority of indicators in environmental statements should be classified as OPI (operational performance indicators). Only some indicators can be classified as MPI (management performance indicators) (classification according to the ISO 14031:2013 standard). It should be emphasized that one of the main barriers during the implementation of EMAS was defining organizations' environmental performance indicators (in separate research, more than 40% of EMAS organizations answered that establishing appropriate indicators was a problem for them) [Szyszka and Matuszak-Flejszman 2014]. The process of designation indicators should be much easier when using the ISO 14031 standard, but only 2 EMAS organization indicated that they use this standard (it is not a mandatory standard even for organizations with implemented environmental management systems) [Szyszka and Matuszak-Flejszman 2013].

## Conclusions

The performed case study shows on the one hand that there are some disproportions between amounts of operational performance indicators (OPI) and management performance indicators (MPI), but on the other hand, it gives a positive link between EMAS implementation and setting challenging goals in each of the four BSC perspectives. Research indicates that EMAS registered organisations pay attention in their environmental statements to the internal processes, learning and development, customers and (rarely) finances, even if using the BSC approach is accidental and not intended. In the opinion of the authors of this article, research should be extended to direct surveys or interviews from primary sources in order to find out which goals and targets indicated in EMAS statements have strategic importance for organisations.

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