EQUILIBRIUM
2 (5) 2010
ISSN 1689-765X

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Environmental Management in Germany

Key words: *environmental management, environmental management systems, ISO 14001, EMAS, Germany*

Abstract: The article raises the problem of environmental management in Germany. Its main research field is focused on environmental management systems (EMS) certified according to ISO 14001 and on Ecology Management and Audit Scheme – EMAS. The main target of this paper is to analyse how EMS operate in the German economy and to evaluate the role of ecological initiatives among companies dealing with various aspects of global economic and environmental issues. The article underlines Germany's strong economic performance that leads to generating approximately 20% of EU's GDP. This makes the German economy one of the strongest among the EU Member States. The research shows that the environmental management plays an important role for German companies and organisations. The high rate of ISO 14001 implementations (4,877 in the end of 2007) gives Germany the fourth rank in Europe and eight place globally. The evaluation of companies that took part in EMAS and shows Germany as a leading country in this research field (1,417 companies and organisations in 2009). The analysis carried out in this research underlines the high importance of environmental management in the German economy and on the company level. Moreover, it shows the increasing significance of environmental CSR as a way of competing on a global market, improving company's image and fitting to global economic and environmental demand. Improving company's environmental performance by implementation of environmental management leads to costs reduction and rationalisation of its organisation. Therefore, it is an appropriate way of dealing with the current global economic crisis and environmental issues.

Introduction

Global ecological problems that are caused by the over-consumption of natural resources have led to initiating a debate on the possibility of a further economic growth with the use of accessible resources and technology. The threat of the civilization's development and its impact on the environment was noticed in the

second part of the twentieth century. At the same period of time some necessary actions were taken to implement the principles of sustainable development in the world's economy (for details see Żuchowski and Żuchowska, 2007, pp. 306-307; Paczuski, 2008, pp. 17-49).

A significant element of the implementation of environmental protection principles to the economic practice was the pro-ecological approach in management. Thus, the basis of the Environmental Management System (EMS) was set up during the 70s and 80s of the twentieth century. In effect, the International Standard Organization (ISO) started working on the formalization of environmental management principles for enterprises in the 90s. The work was concluded with the creation of the standard ISO series 14000 (standard ISO 14001 – the basis for certification of the environmental management system). On the basis of the Regulation No 1836/93[1] from 1993 of the Council of the European Communities, the Ecology Management and Audit Scheme (EMAS)[2] was established at the same time as the realization of pro-ecological European Union's policy (see Godula, 2009). The effective management tools have been created to evaluate, report and improve the environmental performance in enterprises.

The country that impact significantly the elaboration of environmental management principles and their implementation in the economic performance was Germany. The German Association for Environmental Management, founded in 1985, was the very first organization that has taken over the principles of environmental management and used them in economic performance (Poskrobko, 2007, p. 255). Therefore, the German tradition in building the structure of the pro-ecological forms of management and maintaining a high level of society's ecological awareness have been the main reasons for arousing a deep and broad interest in the matter in question.

The main aim of this article is an analysis of environmental management in Germany with the consideration of global ecological problems and current issues of the global economy. The particular focus of this paper is to show the value of environmental management in German enterprises and to explain the reasons for the current situation.

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[1] Regulation adopted on 29 June 1993.

[2] Defined also as Eco-Management and Audit Scheme (EMAS), European Management and Audit Scheme (EMAS), see http://ec.europa.eu/environment/emas/index_en.htm (02.09.2009).

Characteristics of environmental management

In the discussed bibliography the definition of environmental management is presented as a complement of the quality management in the organization. 'It covers the management of the consumption, environmental protection and forming processes' (Hamrol, 2008, p. 200; Poskrobko, 2007, pp. 14-15). The essence of the discussed matter is the fact that environment is said to be inseparable part of enterprise's performance. Moreover, the environmental aspects are taken into consideration on every pattern of enterprises' economic activity (Jastrzębska, 2007, p. 92). The implementation of environmental management's principles lead to connecting an organization's business strategy with the care for natural resources and environment. As a result, the pro-ecological waste management is created by expanding environmental performance on suppliers and enhancing corporate image (Darnall, Jolley, Handfield, 2008, p. 31-32; Beske, Koplin, Seuring, 2008, p. 65).

The introduction of formal principles of environmental management is achieved by the implementation of an environmental management system according to the standard ISO 14001[3] (the basis for certification) and EMAS. One of the motives of implementation of an environmental management system in single enterprise is the need to obey the environmental legislations concerning gas emissions, waste water management and dealing with waste products during the production process (compare Hamrol, 2008, p. 200). The organization that has made the decision to implement the principles of environmental management system and certification according to the standard ISO 14001, is obliged to monitor and obey the environmental legislations. Simultaneously, it minimizes its negative impact on the environment by improving its environmental performance. The implementation of EMAS does not require the certification, it provides an effective management tool to accomplish companies' pro-ecological targets and to improve economic efficiency particularly in manufacture and logistics (for details see Pluskota, 2007, p. 88). The registration in Ecology Management and Audit Scheme – EMAS, is the place for pro-ecological orientated organizations and enterprises in the European Union. It enhances prestige and organization's marketing image. It also helps in improving the marketplace advantage, gives access to new markets, leads to resource savings and lowers costs[4].

Scientific research shows that the implementation of formal environmental management system brings economic benefits (Darnall, Jolley, Handfield, 2008; Schylander, Martinuzzi, 2007; Curkovic, Sroufe, Landeros, 2008, *EMAS – Das*

[3] Current version of the standard – ISO 14001:2004 – revision of the standard ISO 14000 has been announced (see Rogala, 2009, p. 39).

[4] For details see *Benefits of EMAS. About EMAS. Environment*, http://ec.europa.eu/environment/emas/about/summary_en.htm (02.09.2009).

neue EG-Öko-Audit In der Praxis, 2001; Pluskota, 2007). These benefits include: increase in profits by achieving new eco-friendly customers, enhancing a company's market image, improving the relations with investors and stakeholders, costs reduction and improvement in manufacturing efficiency (Schylander, Martinuzzi, 2007, p.137, 145, Pluskota, 2007, p. 88). The thesis above is also proved by the fact that about 20 million people work in enterprises and organizations that are certified according to the standard ISO 14001 (Peglau, Baxter, 2009, p. 13), and 4,331 organizations[5] are EMAS-registered. Environmental management system according to ISO 14001 has been implemented in 148 countries. There were registered 154,572 certifications worldwide by the end of December 2007[6]. If compared with the data from the end of 2006, there was an increase of 21% in the number of certifications and with eight new member countries[7].

Enterprises may also use in an informal way the environmental management by participation in the programme – Cleaner Production (CP) and Responsible Care (RC), that connects social, economic and ecological patterns in company's and organization's performance. Meanwhile, the International Standard Organization (ISO) have plans of introducing the new standard ISO 26000 (Gasiński, Piskalski, 2009, p. 7) in 2010 that would regulate Corporate Social Responsibility (CSR). It would be a very good answer to meeting the challenges of sustainable development and keeping up with the requirements of global economy[8].

Germany – economic outlook

Germany is the fourth largest country in Europe with 357 thousand square kilometres and first regarding population size – 82.2 million inhabitants[9]. Geographically, this country is located in a central part of the continent, in the place where main Trans-European routes cross each other. This affects Germany's economic position and has a major impact on the German economic performance. It belongs to the group of the strongest EU Member States and generates approximately 20% of the EU's GDP[10], the most among the EU countries (see Graph 1).

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[5] *EMAS Statistics – Evolution of Organizations and Sites*, Quarterly Data 31.03.2009, http://www.emas.de/ueber-emas/emas-in-zahlen/ (30.08.2009).

[6] *The ISO Survey of certifications 2007*, ISO Central Secretariat, Geneva 2008, p. 10.

[7] Ibid. p. 10.

[8] For details see *How ISO standards support goals of World Environment Day 2009*, http://www.iso.org/iso/pressrelease.htm?refid=Ref1230 (24.06.2009).

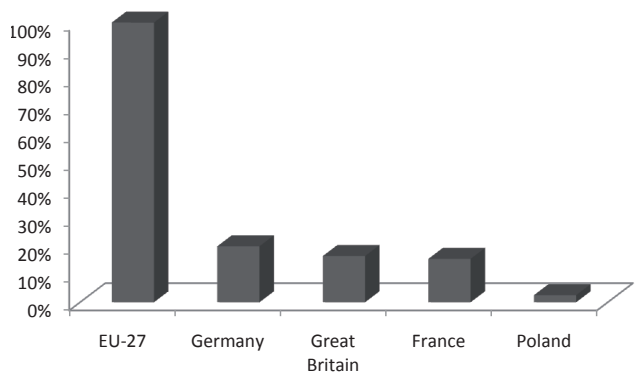
[9] *Key figures on Europe. 2009 Edition*, Eurostat pocketbooks, Office for Official Publications of the European Communities, Luxembourg 2008, p. 47.

[10] *Europe in figures. Eurostat Yearbook 2008*, Eurostat statistical books, Office for Official Publications of the European Communities, Luxembourg 2008, p. 104; *Key figures on Europe. 2009 Edition*, p. 25.

The results of the analysis of GDP per capita (in PPS[11]) that define the state of social welfare, show that Germany belongs to the top 10 EU Member States with the highest rate of that indicator (compare Table 1).

This strong economic position of Germany and the fact of being the largest EU net payer influences its position in EU organizations and structures. The world economic crisis had major impact on the German economy that entered the recession. However, the signs of getting over the global crisis make the international trade look more optimistic, and Germany – as a one of the largest world's exporting economy – is finding their way back on global markets.

Graph 1. Selected countries' share in the EU's* GDP in 2007 (in %)



*EU-27
Source: based on *Key figures on Europe. 2009 Edition*, (2008), *Eurostat pocketbooks*, Office for Official Publications of the European Communities, Luxembourg

Table 1. GDP per capita in selected European countries in 2007 (in PPS)

Country/organization	EU-27	Germany	Great Britain	France	Poland
GDP per capita	24 800	28 100	28 700	27 600	13 300

Source: *Key figures on Europe. 2009 Edition*, p. 19.

Environmental management systems in Germany

The fact that the first association of enterprises that followed the principles of environmental management was established in Germany, has an impact on the evolution of environmental management in this country. High ecological awareness among German companies and organizations, which can see the benefits of green management, caused and raised the popularity of environmental manage-

[11] Purchasing Power Standard.

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ment systems according to the standard ISO 14001, and the popularity of EMAS, too.

Germany is the fourth largest country in Europe regarding the number of certifications issued according to ISO 14001 (the eighth position in the world – see Table 2), placed after Spain, Italy and Great Britain. According to the data collected by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (*Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit*) there has been an increase in the number of enterprises implemented and certificated by ISO 14001 since the year when the environmental management system in accordance with that standard was introduced in 1996 (Kahlenborn, Freier, 2005, p. 101). As the data from the years 2005–2007 (see Table 2) collected by the International Standard Organization (ISO) show that there was a insignificant decrease in the number of certificated companies in 2007. It was the outcome of the world economic crisis and the structure of the German economy (export orientated), where enterprises are strongly dependent on global markets. When the crisis began in 2007, German companies limited their expenses and investments in the future implementation of environmental management systems.

Table 2. The number of certifications according to the standard ISO 14001:2004 in the world's selected countries in the years 2005–2007*

Country	2005**	2006	2007
World	111 162	128 211	154 572
China (without Hong Kong)	12 683	18 842	30 489
Japan	23 466	22 593	27 955
Spain	8 620	11 125	13 852
Italy	7 080	9 852	12 057
Great Britain	6 055	6 070	7 323
South Korea	4 955	5 893	6392
USA	5 061	5 585	5 462
Germany	4 440	5 415	4 877
Sweden	3 682	3 759	3 800

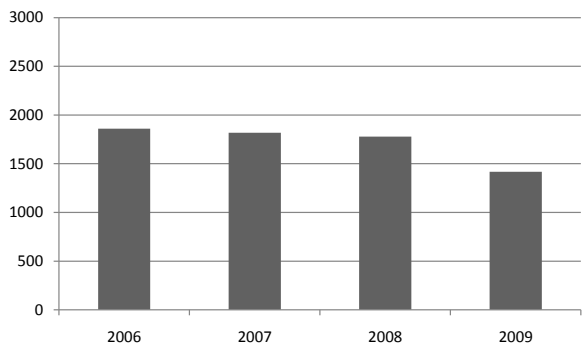
*data from December, each year
** number of certificates according to the standards ISO 14001:1996 and ISO 14001:2004
Source: *The ISO Survey of certifications 2007*, pp. 24–27.

The number of German enterprises implementing the environmental management system according to ISO 14001 proves for high ecological awareness among the society and business. Moreover, it shows the importance of a long term business strategy based on environmental protection. The research made by the Federal Ministry for the Environment, Nature Conservation and Nuclear

Safety states the main reasons for which German companies decide to implement ISO 14001. The reasons include: enhancing corporate image, customers' requirements and ecological policy of the organization (see: Glaztner, 2001, p. 42; compare Beske, Koplin, Seuring, 2008, p. 69; Schylander, Martinuzzi, 2007, p. 137). The actual benefits taken by German companies from the system's implementation are improvement of the organization's performance, legal safety, corporate image, and costs reduction (see Glaztner, 2001, p. 42, compare Schylander, Martinuzzi, 2007, p. 140).

The implementation of ISO 14001 is for many companies a step towards their registration in the Ecology Management and Audit Scheme (EMAS). Statistics show that there were 1,417 German organizations in EMAS at the beginning of 2009, from the total of 4,331 organizations registered in Europe[12]. That makes Germany a leading country among the EU Member States.

Graph 2. The number of German organizations in EMAS in 2006-2009*



*data from 31.03.2009, other years: data from December
Source: Own source based on *Beteiligung an EMAS in Deutschland nach Branchen*, EMAS. Service. PDF downloads, http://www.emas.de/service/pdf-downloads/ (30.08.2009).

The research shows a slight decrease (Graph 2). The cause of that might be insufficient activity of EU institutions in promoting EMAS and in directing the funds for environmental protection to those organizations that are already registered (compare Godula, 2009, p. 36). The small decline in the number of EMAS-registered organizations on German market was compensated with the increase in ISO 14001 implementations and certifications during the discussed research period (Kahlenborn, Freier, 2005, p. 101). The analysis proves that German companies are more into implementation of environmental management system according to the standard ISO 14001 than EMAS.

[12] *EMAS Statistics – Evolution of Organizations and Sites*, *Quarterly Data 31.03.2009*, http://www.emas.de/ueber-emas/emas-in-zahlen/ (30.08.2009).

Ecological initiatives in Germany

World's economic crisis affected hold back of additional expenses and slowed down the rate of environmental management systems implementation among German enterprises. On the other hand, unstable situation on global markets, compelled companies to search for cost reduction and savings within the field of natural resources and energy consumption. Therefore, there have been many ecological initiatives in Germany concerned with searching for renewable energy sources, promoting pro-ecological lifestyle and rational resources' consumption for the last couple of years. The discussed eco-initiatives are an answer to the plans of giving up the nuclear energy in Germany until 2025 (Bil, 2006, p. 97). Therefore, they are supposed to increase the share of renewable energy sources in the economy. The federal government strongly favours all green business initiatives regarding new investments and eco-friendly products. As an example of government's eco-friendly initiative that were used to boost the automotive industry, was the federal programme of additional payments to new, energy-saving cars in Germany.

Companies and organizations take part in EU programmes in the area of environmental protection and energy-savings. The initiatives arise within the frames of various EU programs such as 'Intelligent Energy – Europe programme'[13] (the part of EU 'Competitiveness and Innovation Framework Programme – CIP') and LIFE+ (see for more details in Tkaczyński, Willa, Świstak, 2008, pp. 387–395, 406–409). Moreover, the European Union's programmes support horizontal initiatives in a field of environmental protection among the Member States and help dealing with global ecological problems and questions.

The research shows that many companies undertake the eco-initiatives within the framework of Corporate Social Responsibility (CSR). Global ecological activities are taken by the following German conglomerates: Bayer AG (among other things 'Bayer Climate Program' – eco-investments, research and development[14]), Henkel AG&Co. KGaA (among other things project 'Education for sustainable development' – ecological education, resources-saving investments, research and development[15]), Allianz AG (among other things the project: 'Allianz Corporate University' – ecological education of employees, 'Green Insurance' – eco-insurance products, financial products supporting environmental protec-

[13] For details see: *Biokraftstoffe. Eine gute Ergänzung, Projektbericht. Erneuerbare Energien*, Europäischen Kommission, No. 1, April 2008; *Energieeffiziente Produkte. Verbrauch: Grün ist angesagt !, Projektbericht. Energieeffizienz*, Europäischen Kommission, No. 3, July, 2008.

[14] See: *Sustainable Development Report 2008*, Bayer AG Corporate Communications, Leverkusen, 2009.

[15] See *Sustainability Report 2008. Corporate Social Responsibility at Henkel. Driving Change*, Henkel AG & Co. KGaA, Düsseldorf, 2009.

tion and green business – 'Green Bond'[16]), Volkswagen AG (among other things: eco-friendly products, developments of new technology, ecological education[17]), Deutsche Bank AG (among other things: recycling, support of green investments, ecological financial products[18]).

Projects introduced and implemented in German companies and organizations are the way to deal with global ecological problems. By the reduction of energy consumption and other natural resources, ecological education, eco-marketing, companies take part in solving contemporary and future problems of the world's economy and ecology. The implementation of modern technologies in a field of environmental protection and high ecological awareness are the chances to work out the competitive advantage during the world's economic crisis.

Conclusions

Environmental management is a valuable part of business performance among enterprises and organizations in Germany. The results of this study show that this country belongs to world leaders regarding the number of implementation of environmental management system according to the standard ISO 14001. Based on the introduced analysis Germany has the highest rate of EMAS registered companies and organizations in the European Union. The research of implementation of formal environmental management systems testifies high ecological awareness in business performance and notification of the economic benefits from eco-friendly business (improvement of company's organization, costs reduction, legal safety, image enhancement). However, as a result of a crisis in a global economy, there has been a slight decrease in the number of environmental management systems' implementation in Germany in the last two years.

The research shows that the significance of modern technologies in a field of environmental protection supporting green business (reduction of natural resources' consumption, energy consumption, recycling, waste management) leads to a growth in efficiency of business performance.

Environmental management is a base for economic activity for companies in Germany, there is no access to global markets without it nowadays. All of that has been created through the years, on the basis of German work tradition and culture, together with a strong economy. The implementation of the principles of environmental management system and eco-initiatives is a right way of dealing with global economic crisis and ecological challenges in the future.

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[16] *Building a sustainable future*. *Sustainable Development Summary Report 2008*, Allianz AG, Munich 2009.

[17] *Driving Ideas. Sustainability Report 2009/2010*, Volkswagen Aktiengesellschaft, Wolfsburg, 2009.

[18] *Corporate Social Responsibility Report 2007*, Deutsche Bank AG, Frankfurt am Main, 2007.

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Zarządzanie środowiskowe w Niemczech

Słowa kluczowe: *zarządzanie środowiskowe, systemy zarządzania środowiskowego, ISO 14001, EMAS, Niemcy*

Abstrakt: Artykuł porusza problematykę zarządzania środowiskowego w Niemczech. Szczególny nacisk położony zostaje na funkcjonowanie w tym kraju systemów zarządzania środowiskowego według norm serii ISO 14000 (norma ISO 14001 – podstawa certyfikacji systemu zarządzania środowiskowego) oraz Europejskiego Systemu Zarządzania Środowiskowego – EMAS. Celem pracy jest analiza funkcjonowania zarządzania środowiskowego w niemieckiej gospodarce oraz inicjatyw proekologicznych wśród podmiotów gospodarczych z uwzględnieniem globalnych problemów ekologicznych oraz aktualnych zagadnień występujących w gospodarce światowej. W artykule podkreślona zostaje silna pozycja gospodarcza Niemiec. Kraj ten wytwarza około 20% PKB całej Unii Europejskiej, zaliczając się do najsilniejszych państw tej organizacji. Niemcy są największym unijnym eksporterem, co ma wpływ na silną pozycję tego kraju w światowych obrotach handlowych. Zarządzanie środowiskowe zajmuje bardzo ważne miejsce w funkcjonowaniu niemieckich przedsiębiorstw i organizacji, o czym świadczy wysoka liczba certyfikacji (4877 na koniec 2007 r.) według normy ISO 14001, zaliczająca ten kraj do czołówki europejskiej. W artykule przedstawiono analizę wdrożeń systemu EMAS. Wynika z niej, że Niemcy plasują się na pierwszym miejscu wśród państw członkowskich UE pod względem liczby organizacji występujących w rejestrze EMAS (1417 podmiotów w 2009 r.). Kraj ten jest również pionierem praktycznego wdrażania zasad zarządzania środowiskowego, ponieważ powstało w nim pierwsze stowarzyszenie (Niemieckie Stowarzyszenie na rzecz Zarządzania Środowiskowego), które przyjęło zbiór zasad funkcjonowania w zakresie zarządzania środowiskowego. Tradycja w praktycznym wdrażaniu aspektów proekologicznych w działalności gospodarczej i społecznej, wysoka kultura i organizacja pracy stanowią o sile i skuteczności proekologicznych działań niemieckich przedsiębiorstw. Ważnym elementem wspierającym zarządzanie środowiskowe w tym kraju jest również wysoki poziom świadomości ekologicznej społeczeństwa oraz władz publicznych. Segregacja odpadów, recykling oraz oszczędność energii elektrycznej stały się atrybutami dnia codziennego, a zarządzanie środowiskowe nieodłącznym elementem w zarządzaniu organizacją teraz i w przyszłości.