
9 COMPANIES' RESPONSIBILITY FOR SUSTAINABLE DEVELOPMENT. SUSTAINABLE PRODUCTION PATTERNS IN SMALL AND MEDIUM – SIZED ENTERPRISES

9.1 Introduction

Each product as well as processes associated with its production has an impact on the environment, health and safety of people and economic development. Before the arrival of global financial crisis, the information about launching a new product or service was appearing at international markets on average every three minutes [1]. Current consumption and production patterns are unsustainable. A key challenge to transform the existing patterns of production to more sustainable is to ensure active participation of small and medium enterprises in this process. In the European Union there are more than 20 million enterprises in the private sector – of these 99% are small and medium-sized enterprises (SMEs) with a workforce of nearly 90 million people. In general 60%-70% of the environmental impact relates to SMEs [2]. Strategies for sustainable development must take into account production practices, technologies and management systems in SMEs.

Achieving sustainable development is a collective responsibility. Expression of corporate responsibility for sustainable development is implementation of practices designed to modify existing production patterns to more sustainable. Actions to promote this change should aim to maximize eco-efficiency [3] in the energy and resources consumption (in particular reduction of material intensity of goods and services, reduction of energy intensity, minimize emissions of toxic substances, enhancing recyclability, maximize use of renewables and extending product durability). Companies can contribute to sustainable development through practical implementation of corporate social responsibility concept (CSR). This idea is characterized by voluntary respecting environmental and social values in making business decisions while taking into account expectations of all stakeholders. Implementation of CSR concept at the level of enterprise's production process can be realised by practicing the principles of sustainable production.

The aim of this article is to draw attention to the problem of current patterns of production and the need to change them to more sustainable. Special emphasis was put on crucial role of small and medium enterprises in this process.

9.2 Business Contribution to Sustainable Development

The concept of sustainable development in terms of macro economy can be defined as an approach to planning and decision-making aimed at the pursuit of real and lasting reduction of social and economic differences, as well as environmental protection. This concept was born in the seventies, and was defined in 1987 in the so-called Brundtland Report, as a basis of undisturbed social living [4]. It was assumed that sustainable development means:

- Ecological sustainability,
- Economic growth,

- Social justice between generations and within each generation [5].

Through a set of economic goals (social and material prosperity), environmental objectives (environmental quality) and social goals (equity and security) sustainable development is directly connected with the concept of corporate social responsibility (CSR) [6]. One of the leading contemporary approaches to the concept is that proposed by J. Elkington [7], so called triple bottom line. It assumes that if the company constitute economic and social system, its development objectives should always be a triple bunch, both regarding the economic profit and people associated with the company and concern for the ecological dimension of the activity [8]. The concept of CSR allows consideration of sustainable development from micro-economic perspective. Companies through the implementation of social responsibility concept are contributing to sustainable development. The private sector has great potential in achieving sustainable development policy, including changes in current patterns of production and consumption. Small and medium enterprises in Poland constitute the vast majority of companies and create 69.7% of jobs. Therefore, from the way how they conduct their businesses depends the situation of the majority of Polish employees, communities and the environment. According to a study [9], small and medium-sized enterprises in more than 50% are aware of this, what is the social responsibility concept, still tend to use the so-called unconscious CSR [10]. The companies are implementing best practices in the scope of CSR without knowledge and awareness of these activities. Most small and micro enterprises declare that they behave responsibly because of the noble motives and ethics of their personnel, and their actions are rather realized ad hoc and come from "goodness of heart." In the medium-sized enterprises crucial are benefits of individual entrepreneurs, such as prestige, respect and image [11]. Entrepreneurs often equate social responsibility with philanthropy, and are convinced that its practical implementation involves the expenditure of additional financial resources, and absorbs valuable time of employees. This state of affair seems to confirm the research carried out within the research project of Polish Agency for Enterprise Development (PARP) on "Sustainable Production Patterns (SPP) in Enterprises - Proposed System of Solutions Supporting the Implementation of SPP in SMEs". The results indicate on little responsibility of small and medium enterprises for sustainable development [12]. The concept of corporate social responsibility should be considered from the perspective of all processes and products realized in a company. Only a comprehensive implementation of CSR enables organizations to achieve value in economic, social and environmental dimension. Implementation of CSR concept at the level of enterprise's production process can be realised by changing current patterns of production onto more sustainable.

9.3 Sustainable Manufacturing

Sustainable manufacturing process is an essential element of the sustainable development of the company, which leads to creation of sustainable value based on economic, social and environmental results. Sustainable manufacturing is defined as the creation of manufactured products that use processes that minimize negative environmental impacts, conserve energy and natural resources, are safe for employees, communities, and consumers and are economically sound [13]. Fig. 9.1 shows the general guidelines of sustainable manufacturing relating to five separate areas: product, process, employees, communities, economic results. Specific

operating actions will depend on use of technology in the manufacturing process and the specificity of individual industries.

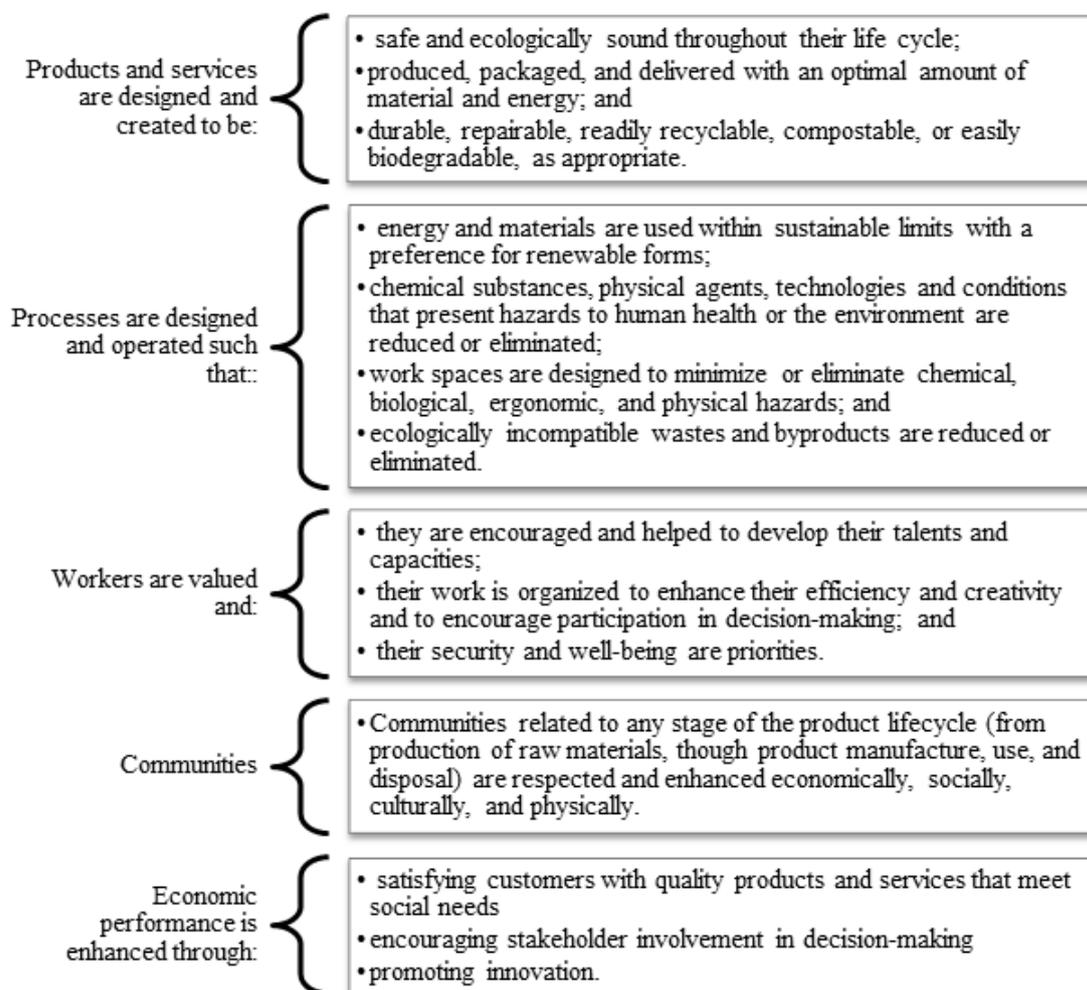


Fig. 9.1 Principles of sustainable manufacturing. Source: [26, 27]

Thus, sustainable production refers to the creation of safe and environmentally friendly products throughout their life cycle, using processes realized in decent and safe work conditions, owing to reduce material intensity, production energy intensity, emissions, and increase the degree of re-use of materials or waste while taking into account the impact of these processes and products on the society and financial performance of a company.

One of the key strategies to achieving the sustainable development, directly related to the manufacturing process is the concept of Cleaner Production. It is defines as [14] continued use, in relation to processes and products of integrated preventive environmental strategy to reduce the risks to humans and the environment:

- In the scope of production processes Cleaner Production means saving raw materials and energy, eliminating toxic raw materials and reducing the amount and toxicity of all emissions of substances and wastes before they are removed from the process,
- In the scope of product the strategy is focused on determining the impacts through the entire product life cycle, from raw material extraction to final disposal of the product.

Cleaner Production programs should aim to increase the profitability of the industry by reducing water and energy consumption, reduce emissions and amount of waste, while improving product quality and safety in the workplace. In this way actions of Cleaner Production will produce two-fold benefits: economic and environmental. The procedure of Cleaner Production implementation developed and promoted by the UNEP (United Nations Environment Programme) is an integrated, universal method for process design or transformation of manufacturing, service plant, production line, technology, work places in waste-free or low-waste production or service systems. It is required not only to implement, but also continued use of four-step procedures for waste minimization, which includes four phases: planning and organization, assessment, feasibility study and implementation. The idea of Cleaner Production is implemented in Poland by the National Center for Implementation of Cleaner Production [15].

9.4 Sustainable Patterns of Production in the Small and Medium-Sized Enterprises – Implementation Status

Small and medium-sized enterprises belong to the majority of European enterprises. Eurostat estimates that there are approximately 20 million companies (industry and services), of which over 99% are small and medium enterprises which employ fewer than 250 people [16]. Approximately 92% of companies employ fewer than 10 employees. Czech Republic, Greece, Malta and Poland have the highest share of micro-enterprises (95% or more) in the structure, and Italy has the largest number of them at all. The structure of enterprises by their size in 27 European Union countries is presented in tab. 9.1. Achieving the objectives of sustainable development does not appear to be possible without the active participation of the private sector, including in particular the participation of small and medium enterprises.

Tab. 9.1 SME structure of the EU27 [2]

	Enterprise size classes				
	Total	Large (250+ persons employed)	Medium (50-249 persons employed)	Small (10-49 persons employed)	Micro (1-9 persons employed)
Number of persons employed	129 754 720	42 360 134	22 027 425	26 938 777	38 428 189
Number of enterprises	20 156 779	42 245	219 956	1 388 759	18 505 812
Percent of persons employed	100%	33%	17%	21%	30%
Percentage of enterprises	100%	<1%	1%	7%	92%
					SMEs

Activities of Polish SMEs in the area of sustainable production patterns consist of voluntary activities, such as joining the program "Responsible Care", "Cleaner Production", the implementation of Environmental Management Systems compliant with ISO 1400, Eco-Management and Audit Scheme (EMAS), or the use of low and non-waste technologies,

techniques and technologies to increase efficiency in the use of environmental resources, or the development of environmental monitoring [15].

One of the possible indicators of implementation of the sustainable production patterns is number of companies with EMAS and ISO 14001 certificate. Although the number of these companies is still relatively low, Eco-Management and Audit Scheme and Environmental Management Systems complied with the requirements of ISO 14001 are the most recognizable voluntary actions taken to protect the environment [15].

ISO 14000 family of standards relates to various aspects of environmental management. ISO14001 and ISO 14 004 are related to the environmental management system. The first one contains the requirements for the implementation of environmental management system, the second includes general tips and techniques to support the process of implementation. Other standards in the ISO 14000 family refer to these specific environmental aspects such as eco-labeling, product life cycle assessment, environmental performance evaluation and auditing. The primary role of the ISO 14001 standard is to support environmental protection and pollution prevention that recognizes the socio-economic needs, in accordance with sustainable development concept. The standard, however, does not establish the absolute requirements for environmental performance. It is required only to make commitments included in the environmental policy [17]. ISO 14001 certificate is an independent confirmation that implemented and functioning management system complies with the requirements of international standard ISO 14001. This means that the company has identified the law relating the business and its products and makes every effort to fulfill the requirements resulting from it, relating to its activity [15]. Based on a study carried on by the International Organization for Standardization in 2008, ISO 14001 certificate had 38419 small and medium-sized enterprises [18]. In Poland the number of ISO 14001certificates (1544 certificates issued [19]) is relatively low compared with EU countries. From the new EU members, in this respect, we are behind Czech Republic (3318), Hungary (1 834) and Romania (3884) [19]. The largest number of ISO 14001 certificates in the European Union are in Spain (16443), followed by Italy (12922), United Kingdom (9455) and Germany (5 709).

Environmental management systems based on the requirements of ISO 14001 are more popular among companies than Eco-Management and Audit Scheme. EMAS (Eco-Management and Audit Scheme) in contrast to the international standard ISO 14001has arisen as the result of the European Parliament decree [20]. This places an obligation on EU Member States to establish an administrative structure that allows organizations to register in the EU system of EMAS [15]. Organizations registered in EMAS act in accordance with applicable law to protect the environment, have a well-functioning environmental management system and publish independently verified environmental statement, presenting m. in. achieved by an enterprise environmental performance indicators [21]. The primary objective of EMAS is to recognize and honor - by allowing the use of the EMAS logo - those organizations that demonstrate compliance with the law and voluntarily, on a regular basis, improve their environmental performance. EMAS network, in addition to issue certificates testifying the use of the environmental management system, provides among others advising and allows dissemination of good practice within the network of experts in various sectors, including the SME sector. An example of orientation of EMAS onto this sector is the creation of the

"EMAS easy", which is identical with EMAS, but also takes into account the specific nature of knowledge and human resources of SMEs [15]. European Union statistics show that 4 583 enterprises in is certified to EMAS, of which 81% are SME's (23% micro, 33% of small businesses, 25% average). In Poland 25 organizations have implemented EMAS [22], which puts us in 11th place among European Union member states. The most companies have implemented the system in countries such as Germany (1346), Spain (1236) and Italy (1162) [23].

Most indicated by SMEs [2] barriers to implement certified environmental management system are:

- Lack of information;
- Lengthy time to apply;
- High implementing costs and running costs;
- No demand from legislation or customers and
- Other sector standards are more important.

Declaration of SMEs on the implementation of environmental management system in Poland shows that nearly 60% of enterprises have no plans to obtain ISO 14001 certificate, while 20% of them want to implement some environmental management system in the future [24].

Research conducted under the research project of PARP on "Sustainable Production Patterns (SPP) in Enterprises – Proposed System of Solutions Supporting the Implementation of SPP in SMEs" indicate a slight degree of sustainable production patterns implemented in SMEs sector. Diagnosed during the study barriers of sustainable production patterns implementation in Poland include:

- Insufficient awareness of the business impact on the environment,
- Need to involve financial resources,
- Insufficient human capital,
- Bureaucracy associated with obtaining funding for innovative environmental activities,
- Complexity of legislation in force, their complexity and unreadable for the average entrepreneur [15].

A disturbing fact, in recognition of the author, is insufficient awareness of the impact that the company has on the environment. According to research conducted in 2008 on "Problems of the SMEs impact on the environment" 68% of business sector representatives said that their company has little contribution to environmental pollution, and 7% said they have not at all. Impact of business as a "big" and "very high" rated 25% of respondents. Lack of recognition the pressure on the environment as important factor is the lack of documentation specifying the companies' activities on the environment [24]. Another study, also conducted in 2008, entitled "The potential of small and medium enterprises in the creation of new innovative products – environmentally friendly solutions" [25] shows that about 36% of companies believe that they do not impact negatively on the environment, and 53% believe that it operates, but minimally. Also in the EU's small and medium-sized enterprises are not fully oriented as to the actual environmental impact of their activities. Their share of the in-

dustrial pollution is estimated at 70%, while between 75% and 95% of European SMEs, estimates that their activities do not adversely affect the environment, and therefore do not take any action to reduce these impacts. Businesses do not have sufficient knowledge about environmental hazards that is the result of their activities, possible ways of reducing the adverse effects on the environment and knowledge about the requirements of the law. In addition, SMEs cannot cope with frequent changes of law and its small readability [15].

9.5 Conclusions

Data analysis made for the purposes of this study indicates a low level of advancement in the implementation of sustainable patterns of production in Polish SMEs in comparison with other EU member states. The transformation of the current patterns of production to more sustainable in the sector of small and medium enterprises may be more difficult in comparison to larger companies, although SMEs are characterized by greater flexibility in adapting to changing environmental conditions. Implementation of sustainable patterns of production in small and medium-sized enterprises facing limitations connected with the problem of companies' size in this sector (resources, lack of skills and knowledge, etc.). Without awareness of the impact it is difficult to talk about responsibility, including sustainable development. Taking into account the fact that this sector accounts for more than 90% in the structure of companies and its share of the industrial pollution is estimated at level of 70%, and that 68% of companies' representatives of the sector in Poland, said that their company has little contribution to environmental pollution, a key aspect in the process of changing the current patterns of production must be education and awareness raising in the scope of environmental and social impact of the sector. Responsibility for sustainable development in the area of production process should be expressed in the pursuit of sustainable patterns of production, including the reduction of material intensity, energy intensity of production, reduction of pollution levels, increasing recycling of materials, etc. while achieving economic and social objectives.

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